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THE RIFLE GALLERY

ITS CONSTRUCTION AND USE

FOR THE NATIONAL GUARD, SCHOOLS AND CLUBS

ALSO A CHAPTER ON REVOLVER SHOOTING

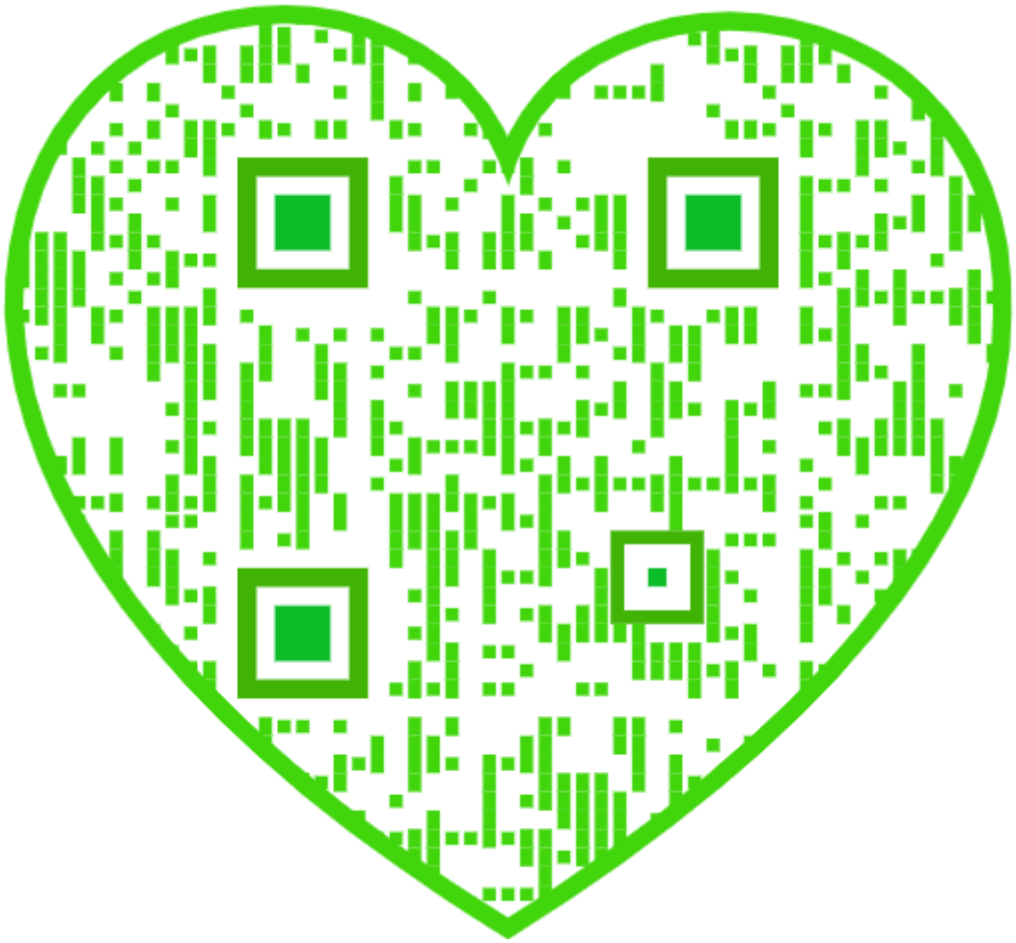
BY

JAMES E. BELL

MAJOR AND INSPECTOR GENERAL OF RIFLE PRACTICE

DISTRICT OF COLUMBIA MILITIA

Price Ten Cents



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PREFACE.

The author claims no originality in the preparation of this book, but he takes a justifiable pride in the work and is actuated by highly patriotic motives in presenting it to the soldier and the instructor, believing it will accomplish much good in leading to the restoration of our country to its old time prestige for marksmanship, and in giving to the present and rising generation a confidence in themselves, which cannot result otherwise than in making this a strengthened and invincible nation.

THE RIFLE GALLERY

As a first proposition I take the broad grounds that a soldier who does not know how to shoot the rifle with which he is armed, is out of place in a military company. And secondly, that every soldier should be provided with means for practice and development as a marksman, which if he neglects or fails to use so as to demonstrate his right to be known as a soldier, he should be discharged, in the interest of the service; as he would be worthless in time of need.

A soldier once protested against being required to fire a score on the range, saying that he did not join the National Guard for the purpose of shooting; he only wished the drill exercises. That man was out of place at that time, and would be much more so now, as the drill and other military duties have given place largely to rifle practice, which circumstances have forced to the front.

The mastery of the rifle is the great desideratum, consequently it becomes our duty to encourage the soldier in every manner calculated to develop him in becoming expert in its use.

When he has arrived at that point or degree of skill which it is the intention he should, he is in a

position to command the respect and admiration of all good citizens, as he is equipped to prove himself a tower of strength in case of his country's need.

Very few men are born marksmen. Nearly every man may become one if he will devote the time necessary to perfect himself in the art of rifle shooting.

It is the intention of this work to place in possession of Company officers whose commands are not provided with the means of training their men to become real soldiers, information which will enable them to construct a rifle gallery, with but slight expense; and how to maintain it; also to furnish every detail as to its equipment, and, after it is ready for use, to tell in the plainest language how to train the soldier to become expert in the use of the rifle, which he can do if he will faithfully observe the rules laid down and persevere in the drills prescribed for that purpose.

The entire field covered by the instruction of the soldier in the matter of rifle practice is one of interest and pleasure, as it appeals most strongly to the individual on account of its competitive features, and holds him more closely than any other branch of the routine work to which he is assigned.

In selecting a room for gallery practice, endeavor to obtain one between 50 and 75 feet in length. One hundred feet will be better if it can be had. The width is not material except where a number of targets are used. It is assumed that a company will have use for not more than four targets, and upon that assumption the gallery will be constructed and equipped.

The Bureau of Ordnance, War Department, furnishes cast iron target-plates, measuring 20 by 30 inches in size, which weigh about 100 lbs. The

miniature targets proper occupy the centre of this space, and are 8¾ by 10 inches, with the bullseye 1½ inches in diameter, back of which is bolted an iron bell.

These targets may be obtained on requisition through the proper channel or can be purchased for the sum of $2.91 each.

These miniatures represent the "A" target used on the range and the values of the shots on them are the same. The bullseye counts five, the centre four, the inner three, and the remainder of the target two. The greatest value is given to the shot: that is, a shot striking in the four ring or centre, which barely cuts the edge of the bull is counted five.

For determining the value of a shot on an iron target, the officer conducting the practice should be provided with a gauge the exact size of the caliber of the rifle with which to measure doubtful shots which spread over the line, covering a space much larger than the size of the ball. The centre or impact of the shot is plainly discernible and by means of the gauge is easily given its proper value.

In locating the targets, if against a solid wall, I would advise a backing of two inch pine, faced with ¼ inch boiler iron to cover at least one foot above and below the target plates.

In screwing or bolting the targets in position, they should be provided with two pieces of 2 x 4 pine, to be placed perpendicularly under and on each side, for the purpose of holding them away from the backing to allow space for the bell at the rear of the bullseye.

Place the targets with 8 inches of space between them. This will make the space between the bullseyes 28 inches, and the entire space covered by four

targets and backing, 4 feet 6 inches wide by 10 feet in length.

This is supposed to cover sufficient space to catch all of the shots which may be fired by the most inexperienced marksmen.

If it be found desirable to reduce the cost of the backing, the entire space need not be covered with iron. Five strips, 8 inches wide by 2 feet 6 inches in length to screw between the targets, and strips 1 foot wide and 10 feet in length for top and bottom will answer as well. If the latter plan be adopted, it will be best to cut holes back of the targets through the wood backing to admit the bells, and screw the targets directly to the wood without the use of the 2 x 4 pieces of pine.

If it is the intention to use in connection with these targets, one for volley firing, as shown in Plate C, it will be necessary to use ¼ inch boiler iron over the entire surface and have the targets hinged for lowering as hereinafter described.

It is important to provide good light for the targets, as most, if not all, of the shooting will take place at night.

For this purpose use a board 1½ inches thick, 12 inches wide and 10 feet long, suspended or in some manner held in place, about 5 feet in front and over the targets, at an angle to throw the light on them.

On the side next to the targets, the gas pipe or electric wires should be placed with the necessary connections for the lights, or if oil lamps be used, for the proper and safe attachment of the lamp holders.

Assist the light by the use of tin reflectors, as those of glass are liable to be broken by the splash from the bullets. If electric lights are used, protect the globes by fine wire screens.

When a bullet strikes a target it is with such force that it splashes and the lead is thrown in a spinning direction, rendering it dangerous for any one to be near on either side; therefore as a matter of precaution I would advise the placing of a ½ inch pine board, 12 inches wide, over the top and at the two sides of the targets to catch the splash. This may prevent possible accidents.

That portion of the lead which rebounds is in no way dangerous or annoying to the shooter.

The targets having been located and arranged as suggested, with the lights properly protected, are ready to be given their white coating which will show the location of the shot. For this purpose white zinc has been found to be the most desirable as it makes a smooth white surface and dries quickly. Mix it in a paint pot or tin cup and apply with a brush. Give it several coats, until thoroughly covered, after which it will require only an occasional full coat. It is not necessary to wait for the zinc to dry, after having marked out the shots on the target. The practice may be continued without interruption. A cup for mixing bone or ivory black, will also be necessary, for use in blacking the interior of the bullseye, marking out the shots and making it a plainer object for aim.

If the room selected for gallery practice is to be used for other purposes, or it is not deemed desirable to attach the backing and targets permanently to the wall, they may be mounted on a frame 10 feet in length by 6.6 feet high, with a backing substantially as described above, with the exception that openings be made back of each target of sufficient size to permit the bells to pass through, permitting the target plates to be screwed flat against the backing. The frame to be constructed so as to be mounted on

PLATE A.

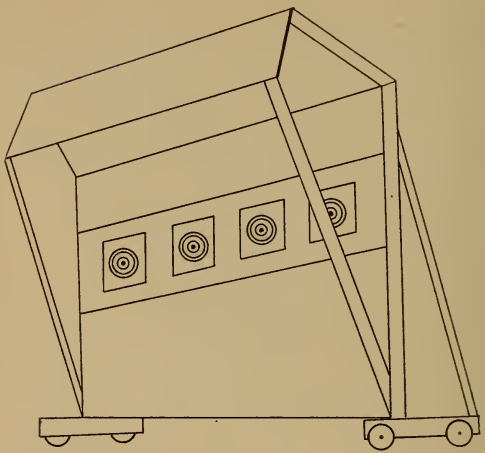
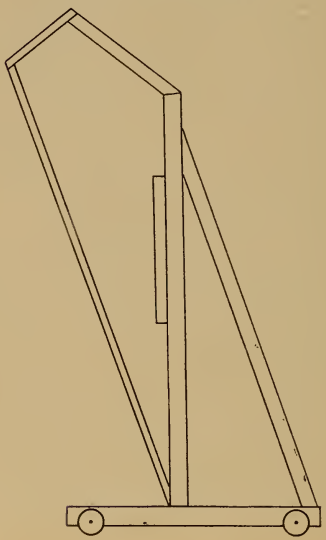


PLATE A.- *End view.*



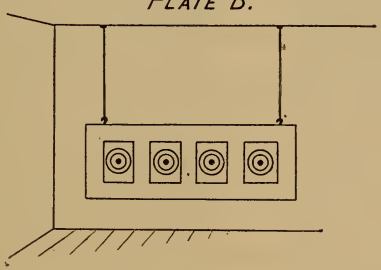
wheels or casters that it may be moved and used in any desirable position in the room. The protection shield for the lights is made part of the framework. See plate A.

The dimensions for the backing described in both cases above are made ample upon the supposition that the range or distance to be fired over will be at least 75 feet in length. If, however, it be 40 feet or less, the iron plates on which the targets are cast are ample in size to stop any shot fired at them and the top and bottom strips of boiler iron need not be used, but the pieces should be placed on each side and between the targets. The reduction in size and weight of the equipment will be desirable particularly in case of it having to be moved.

Another method of arranging the targets and backing is to have the combination built so as to be suspended by wire ropes with fall and tackle which will admit of being raised or lowered.

This is desirable on account of permitting the bullseyes to be brought more nearly to the level of the shooter when practicing the sitting and prone positions. Plate B.

PLATE B.



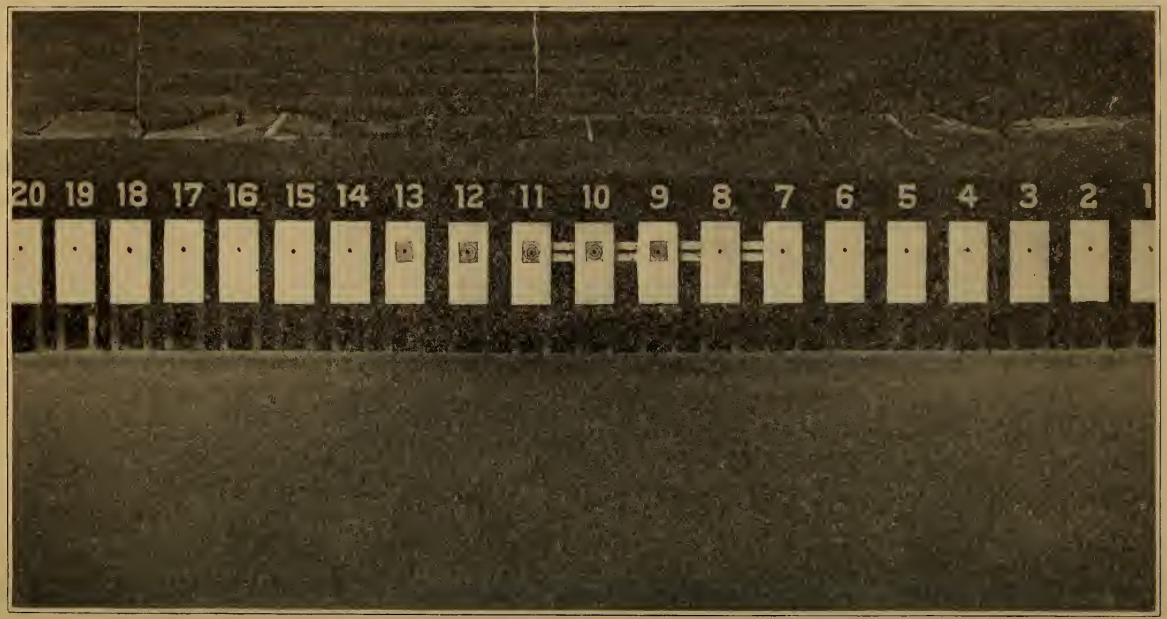


PLATE C

Plate C is a view of a part of the rifle gallery of the National Guard of the District of Columbia which is located in a room 90 by 55 feet, and is presented for the purpose of showing the details and target arrangement for volley firing. The volley target which is nearly 12 feet in length, is fully exposed by lowering targets 7, 8, 9, 10 and 11, which are hinged to the floor, the hinges being attached to the wooden supports to which the targets are fastened. The targets are held in position when up by screw eyes attached to the back of the targets and the backing, through which an iron pin passes. The firing in this gallery is over a range 75 feet in length.

The volley target consists of 1½ inch black line, representing the bullseye, on either side of which there is a white line 5½ inches in width.

This target is painted and is permanent and the shots are marked out as on the gallery target. There are only two values for volley shots. Those which strike the black, count five, and those in the white, above and below, count four; all others are misses. Volleys are fired kneeling and the practice consists of three volleys fired at the commands, time limit 40 seconds. The Company record and percentage is obtained by multiplying the number shooting by 15, the possible score for each man, and dividing the product by the actual value of all shots which count. For instance, 20 men fire three volleys, making a total of 60 shots, 300 being the possible. They make 20 bulls = 100, and 30 centres = 120. 100 + 120 = 220 : 20 = 11 as the individual average, and 220.00 : 300 = 73.3 being the percentage of Company.

The manner of equipping a gallery with iron targets having been fully described, we will now tell

how one may be more economically fitted out by using paper targets.

The Ordnance Department manufactures for the Army a gallery target, X, with a 1⅓ inch bullseye, which is listed at $5.10 per thousand, with white or black pasters at 5 cents per thousand. These may be obtained by applying through the proper channels at the prices indicated.

The Dennison Manufacturing Company, with offices in New York, Boston, Cincinnati, Chicago, and St. Louis, also furnish an Armory target, designated as No. 8, which is 8 by 12 inches, with a bullseye 1 5-16 inches, at a cost of $6.00 per thousand, and the necessary black and white pasters at 40 cents per thousand.

A better way to supply the targets is to have them printed at some local printing office. The type can easily be made from a target as a pattern. Have them printed on a cheap quality of cardboard (No. 70 pulp), as this will be of sufficient stiffness not to require pasting to a backing.

If the target is 8 by 12, the cardboard should be about 10 inches by 14 inches, leaving a margin, to assist in locating shots fired by inexperienced marksmen. Holes should be made in the upper corners of the targets through which wire hooks pass to suspend them from the top of the target frame. In using the paper targets, the backing or ball catcher must be of wood, as the splash from the ball which strikes iron will cut through the paper unless at least 6 feet away.

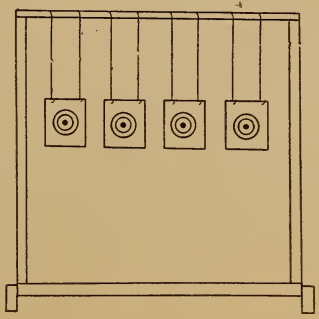
The penetration of a ball from a gallery charge is about 1 inch in solid pine, therefore at least 2 inch stuff should be used, covering a space of about 4 by 10 feet, with the centre or space immediately back of each target, about 18 inches square, covered

by nine pieces of 6 inch wood beams, cut in cubes, placed with the ends faced out. These can be made to fit in the backing and will be found to be a good and inexpensive ball catcher, as all of the lead will be preserved and it can be cast into bullets or sold. A box filled with dirt or sand will be found a cheap and easy way to provide a backstop. The boards immediately back of the bullseye will require renewing frequently when dirt is used, as it sifts through the holes from being beaten out by each succeeding shot.

The frame for carrying these targets, while made on the same plan of that for the iron (Plate B), need not be so substantial nor more than 5 feet 6 inches in height. It should be covered with white cotton the same as target frames for range work. The strip need not be more than one yard wide, tacked across the frame. It will be easier to paste the small targets on paper, than upon the cotton; therefore the cotton should be covered with a heavy manilla paper.

If cardboard targets are used, no covering whatever will be necessary, the targets hanging suspended by wires, as the ball passes through so quickly that a hit does not disturb the target, making a clean hole which can be covered with a white or black paster as the value of the shot requires.

PLATE D.



One advantage in the use of paper targets is that they may be preserved and certified with the name of the soldier and the date on which any particular score was made. It will be found a source of pleasure and will incite rivalry, when the soldiers have grown to be experts, to preserve the targets bearing evidence of skill and display them in a conspicuous place in the Armory.

It will be well to offer two prizes, one to the soldier making the best score in ordered, and the other for the best in voluntary practice during the month, with the targets displayed in a frame under the heading of "Champion Scores."

Targets for ordinary practice are useful so long as the pasters do not obliterate the lines which show the value of the shots, but they should be discarded for competitive purposes when they are past giving the soldier the correct values.

It is sometimes not practicable to construct a gallery on the inside of a building, but the surroundings may admit of one being located so that a funnel or box shaped tube of the proper length can be built, leading out of one of the windows of the Armory to where the targets are to be placed. Generally, galleries of this kind have but one target, but it may be constructed so as to admit of two. If the tube does not lead to a natural covering, one must be provided, leaving space for the markers and ball catcher or bullet stop, lights, &c. &c. I advise the use of paper targets in galleries of this kind, as the splash from the bullets striking iron would be liable to injure the markers.

A marker will be required at each target to signal the value of the shots as they are made, which he can do with disks, as is done on the out of door ranges; a white disk denoting a bullseye or 5; a red

disk a centre or 4; a white disk with a black cross, an inner or magpie, 3, and a black disk an outer, or 2, with a waive of the red disk across the target to denote a miss.

The marking disks should be 2, 4 or 5 inch circular pieces of metal or wood painted with red on the back of the white, and the black disk with white on the reverse side, bearing a black cross. These should be attached to the end of a three foot rod.

The shots on the target should not be pasted out until the score is finished

Practice should be conducted so as to include all positions on the range, therefore it will be necessary to construct a substantial shooting stand or platform of the requisite height and size to admit of the soldier firing his scores in either the sitting, kneeling or prone positions.

It is hardly probable that any one will consult this book for the purpose of building a rifle gallery 100 yards in length under cover, as outside of large cities where they are provided in the construction of Armories they are rarely found, but where it is possible they should be had, as practice at the longest attainable range is sure to prove the most beneficial.

Since the introduction of smokeless powder and high power guns, every good soldier is bent on attaining the highest proficiency in marksmanship, therefore the 100 yard range is sought for as more nearly approaching the out of door distances and conditions.

For this class of practice the round ball will not prove to be accurate. The best results are obtained with the 120 grain bullet of either the Hudson or Kephart pattern, using 8 grains of "Unique" or 9 grains of "Sharpshooter" powders, manufactured by

the Laflin & Rand Powder Company. The 7-12 or 8½ U. M. C., or the No. 3 W. Winchester primer should be used.

With this combination some remarkably fine work can be done with the .30 cal. Springfield Rifle; groups of from 2 to 3 inches frequently being made by the experts.

The four inch bullseye is the regulation size for this distance.

The only question of light for the gallery thus far treated relates to that for the targets, and in this connection let me emphasize the necessity for it being plentiful and bright.

In the gallery of the N. G., District of Columbia, all lights are extinguished during practice save those at the targets. After the preliminary instructions have been given and the soldier has taken his position on the firing line, the scores are fired out of the darkness.

Once accustomed to this manner of firing it will be found to be preferable for night shooting, as the sights stand out clear and well defined on the white targets.

If it is deemed best to use lights near the firing line let them be to the rear and over the head of the soldier, otherwise if it is not evenly distributed on the sights it will cause irregular shooting.

No thought has been given to the location of windows in the gallery, as the work done by the National Guardsman will be principally at night, but should the reflection from outside lights interfere, it should be cut off by the use of curtains or blinds.

The gallery having been equipped with targets, backstops, lights, cups, brushes, white zinc, ivory black, disks and pasters, it is now time to fit up the

loading room with the necessary tools for furnishing the ammunition to be used in practice.

The following lists issued by the Ordnance Department, United States Army, contain nearly everything required to equip this branch of the business, showing cost of the several tools. If the outfit cannot be obtained on requisition, they may be purchased through the proper official channels at the prices indicated.

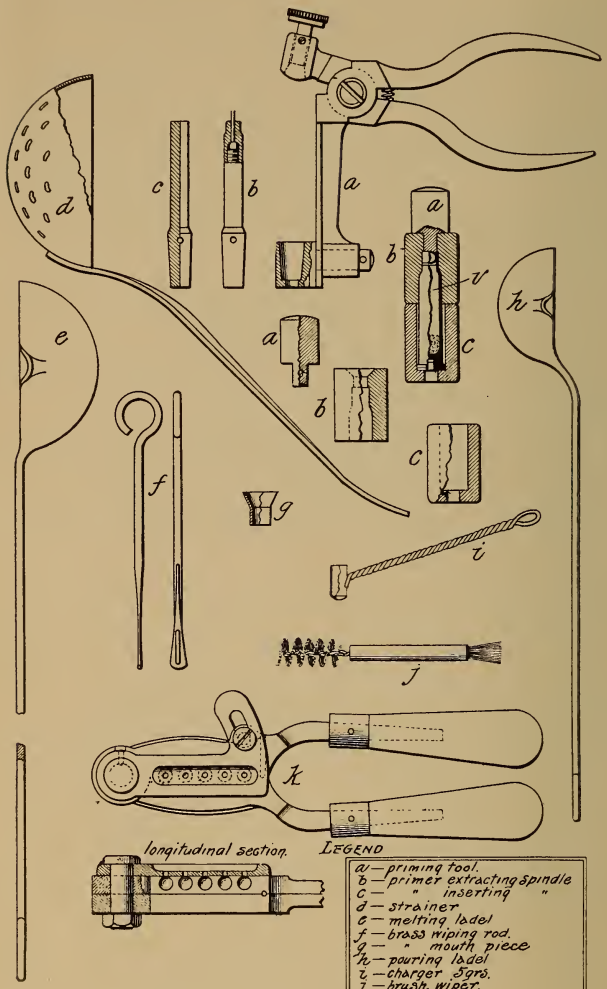
LIST OF TOOLS FOR RELOADING CALIBER .30 GALLERY-PRACTICE CARTRIDGES

This set of tools comprises the following articles (shown on page 20).

1. Priming tool, without spindles.
2. Primer extracting spindle, with 5 extra pins.
3. Primer inserting spindle.
4. Charger, hand reloading (capacity 5 grains black powder).
5. Loading anvil.
6. Loading die.
7. Loading punch.
8. Ball mould (5 balls).
9. Melting ladle (for lead alloy or lubricant).
10. Pouring ladle (for filling ball mould).
11. Strainer (for lubricating balls by dipping in melted Japan wax).
12. Brush wiper.
13. Brass wiping rod (for cleaning fired cases, dies, etc.).
14. Brass mouthpiece or funnel (for use with brush wiper and charger).

Tools Nos. 2, 12, 13, and 14 constitute, when necessary, a separate set, in a paper box, for decapping and cleaning service caliber .30 fired cases before turning them into Frankford Arsenal. Total cost

TOOLS FOR DEGAPPING AND CLEANING CAL.30-FIRED CASES
— AND —
RELOADING CAL.30-GALLERY PRACTICE CARTRIDGES.



LEGEND

a	priming tool.
b	primer extracting spindle
c	" inserting "
d	strainer
e	melting ladel
f	brass wiping rod.
g	" mouth piece
h	pouring ladel
i	charger 3grs.
j	brush wiper.
k	ball mold.
a	loading punch.
b	" die.
c	" anvil.
v	assembled cartridge.

of set, including paper box, $0.59. If necessary, the case can be decapped by inserting the spindle in it and striking the butt of the latter on a bench or block, but when the priming tool is available the decapping is done with it and the spindle.

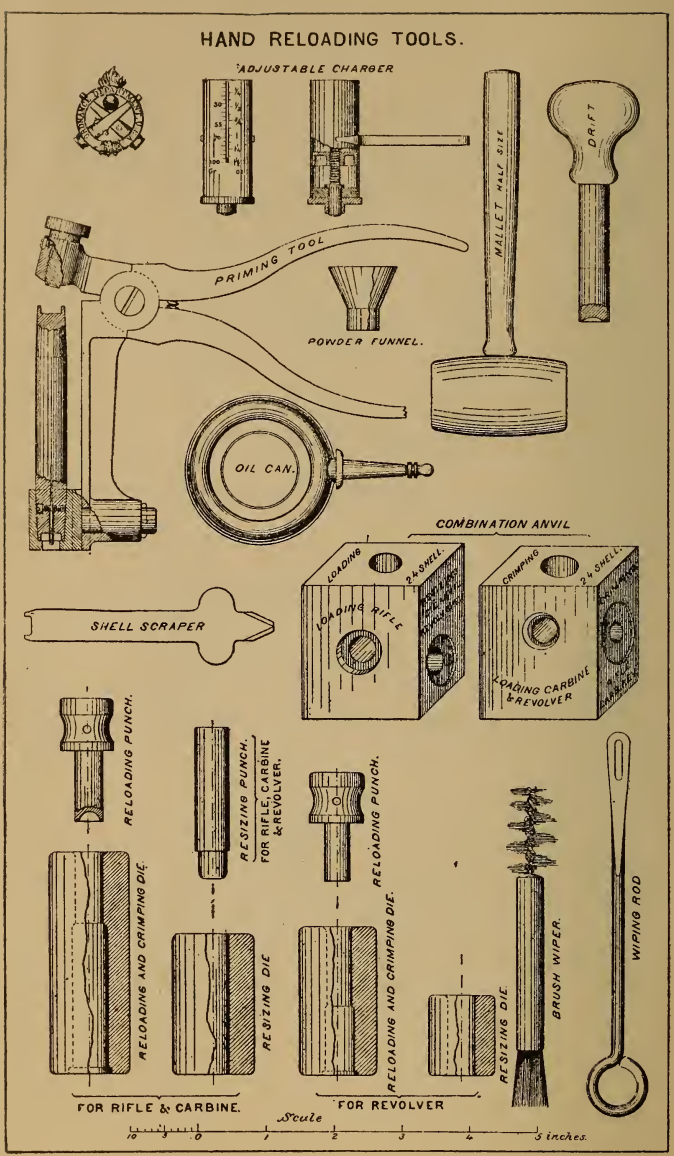
BILL OF MATERIALS FOR 1,000 CALIBER .30 GALLERY-PRACTICE CARTRIDGES

1,000 gallery cartridge cases, unprimed	$12.11
1,000 cartridge primers	1.07
1,000 round balls, lubricated	.75
7 ounces "Unique" Smokeless, at $2.00 per pound	.88
Total	$14.81

One-fourth pound Japan wax, at 8½ cents per pound, will lubricate 1,000 round balls.

PRICE LIST OF TOOLS—.30 CALIBER RIFLE

1.	Priming tool, without spindles	$1.84
2.	Priming extracting spindle, with 5 extra pins	.26
3.	Primer inserting spindle	.18
4.	Charger, hand reloading (capacity 5 grains black powder)	.10
5.	Loading anvil	.20
6.	Loading die	.25
7.	Loading punch	.10
8.	Ball mould (5 balls)	4.73
9.	Melting ladle (for lead alloy or lubricant)	.73
10.	Pouring ladle (for filling ball mould)	.06
11.	Strainer (for lubricating balls by dipping in melted Japan wax)	.06
12.	Brush wiper	.09
13.	Brass wiping rod (for cleaning fired cases, dies, etc.)	.13
14.	Brass mouthpiece or funnel (for use with brush wiper and charger)	.10
	Wood box	.80
	Total	$ 9.63


HAND RELOADING TOOLS.
ADJUSTABLE CHARGER
MALLET HALF SIZE
DRIFT
PRIMING TOOL
POWDER FUNNEL.
OIL CAN.
COMBINATION ANVIL
LOADING
2½ SHELL.
LOADING RIFLE
CRIMPING
2½ SHELL.
LOADING CARBINE & REVOLVER
SHELL SCRAPER
RELOADING PUNCH.
RESIZING PUNCH.
FOR RIFLE, CARBINE & REVOLVER.
RELOADING PUNCH.
RELOADING AND CRIMPING DIE.
RESIZING DIE
RESIZING DIE
RELOADING AND CRIMPING DIE.
BRUSH WIPER.
WIPING ROD
FOR RIFLE & CARBINE.
FOR REVOLVER
Scale
10 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 inches.

DESCRIPTION OF HAND TOOLS FOR RELOADING SMALL-ARMS CARTRIDGES, WITH INSTRUCTIONS FOR THEIR CARE AND PRESERVATION

(CONDENSED FROM ORDNANCE NOTES NOS. 114, 231, AND 322)

PRICE LIST OF TOOLS—.45 CALIBER RIFLE

The set of hand tools, model 1883, consists of:

1 Combination anvil	$ .75
1 Brush-wiper	.17
1 Adjustable charger	.60
1 Reloading and crimping die, for rifle and carbine shell	1.55
1 Reloading and crimping die, for revolver shell	1.25
1 Resizing die, for rifle and carbine shell	2.00
1 Resizing die, for revolver shell	1.00
1 Drift	.06
1 Powder funnel	.10
1 Mallet	.13
1 Oiler	.06
1 Priming-tool, with spindle and six pins	2.10
1 Reloading punch, for rifle shell	.60
1 Reloading punch, for carbine shell	.60
1 Reloading punch, for revolver shell	.50
1 Resizing punch	.34
1 Shell scraper	.15
1 Wiping-rod	.15
1 Tool-box, and cotton waste	1.89
Total	$14.00

Prices are based on a lot of fifty sets made in the fiscal year 1901.

The list for the 45 cal. is included, as some troops may not change to the 30 cal. for some time.

CARE AND PRESERVATION

The tools should be used only for the purpose intended, and with great care; with proper use they will last for many thousand rounds.

After use they should be cleaned, using the wiping rod and clean oily rags, or cotton waste lubricated with cosmoline or paraffine oil, and kept

in a dry place. Never scour or polish them with any gritty substance.

The resizing die is slightly smaller than the average rifle chamber. To prevent undue wear of its inner surface, the outer surface of the shell must be cleaned and slightly oiled before resizing.

Equal care should be exercised with the loading and crimping die The slight contraction of its interior diameter, which does the crimping can be very easily worn so as to render the die worthless for this purpose. The end surface of this die and the shoulder surface of the reloading punch should be kept clean and free from the lubricant of the bullets to insure, by their contact, the proper total length of the cartridge.

The loading and crimping die will serve to gauge and inspect the finished work. If all cartridges enter it fully they will give no trouble in the chamber of the arm.

RELOADING OPERATIONS

The order of operations is as follows:

Extract the primer, wash and wipe dry the shell, inspect the shell, lubricate the body slightly, keeping the interior head and the pocket free from grease, resize, scrape out the burr from the mouth, prime, load, crimp, and lubricate. The priming tool for the .30 caliber shell, with priming extracting spindle, and primer inserting spindle can be used in priming and decapping the .45 caliber shells.

SPECIAL PRECAUTIONS

Never reload except under the supervision of a competent officer.

Never attempt to prime a loaded shell.

Never attempt to load a primed shell except with the tools provided to render the operation a safe one.

Clean shells soon after firing, and preserve from dirt or injury all those reserved for reloading.

Inspect all shells after cleaning, and reserve for reloading only those showing no defect or injury. Reject all that show a crease or line partly or wholly around the shell near its base.

Grease slightly, and resize every shell before loading.

Grease well every reloaded cartridge before firing.

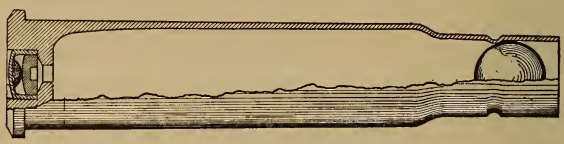
The latter precaution tends to prolong the life of the shell in reloading.

When fired dry or only partially lubricated there is a tendency to early rupture of the shell; and the same effect may be due to too great a cartridge-head space in the arm, from wear of breech mechanism, even when the shell and chamber are lubricated. The conditions most fatal to the durability of the shell are a dry, clean chamber and shell, with the body of the latter near the head, slightly lubricated. Under these conditions some shells will show signs of rupture on the first round.

The foregoing lists make no mention of a bench loading tool, although the Department issues them. It is much more desirable to use this kind instead of the hand loader, as the work can be more rapidly and satisfactorily done.

The Ideal Manufacturing Company, of Hartford, Conn., manufactures the Universal powder measure No. 1, listed at $2.50, which in some respects is superior to the one issued by the Department, and its use is recommended as a means of securing uniformity in loading. They also have in stock a tool known as an Indenter, which it is important to have. It is listed at $1.25.

With the Indenter, any ordinary shell for the 30 cal. rifle can be made available for gallery use by placing an indentation at the proper distance in the neck to prevent the ball from falling into the main portion of the shell. This tool will make shells fired on the range useful for gallery purposes. The regular gallery shell is provided with a cannelure about 5-16 of an inch from the opening in the neck.



GALLERY SHELL

With round balls for the 30 cal. rifle at seventy-five cents per thousand, it is scarcely worth while to mould them, yet it would be well to include a mould in the outfit. The balls must be carefully examined before using them, as many are found to be imperfect. All such should be rejected, as those which are irregular will not shoot accurately.

Sometimes the balls do not fit the shells tight enough to be held in place. Remedy this defect by giving them another coating of Japan wax lubricant, using the strainer "d" shown in the list of tools, for this purpose. The first cost of material for a thousand rounds of ammunition is shown in the list. Subsequent loading will be a very small item as the cases or shells will, with proper care, last a long time. When practicing have a bucket of water placed at the firing point and require that the shell as soon as fired be thrown in the water After taken out they should be thoroughly dried by heat and immediately decapped. Use the brushwiper "J" to

remove the sediment in the shells. They are then ready to prime.

See that the reloader is provided with a funnel shaped mouth of a size to fit in the 30 cal. shell so as to insure all of the powder falling therein. An expert loader will hold in his left hand five or six shells in which he will place the powder, then he will set the shells on a piece of rubber ¼ inch thick, 6 x 6, place a ball in the mouth of each, and with a hard wood mallet, tap them into place. The shells are now ready for service.

For the 30 caliber the proper charge for gallery work up to 75 feet is 3¼ grains of "Unique" powder, manufactured by the Laflin & Rand Powder Company. The charge may be varied to meet the required distances. While the primer issued by the Government gives good results, the U. M. C. primers 8½ and 9½ and the Winchester No. 3 W. appear to be slightly stronger and their use is recommended.

The gallery charge for the 45 caliber shell should be a 146 grain round lubricated ball, with three grains of "Unique" powder. The No. 3 W. Winchester or 8½ or 9½ U. M. C. primer should be used.

To obtain regular shooting it will be necessary to place a wad of card board or heavy pulp paper over the powder to prevent the lubricant on the ball from coming in contact with the powder, thereby destroying a part of its strength.

Occasionally all of the powder in the shell does not burn, causing less force to be exerted on the ball. This is due to the fact that the muzzle of the rifle is depressed so that it falls down against the ball. Hold the rifle so the breech will be down, and a gentle tap while in that position will place the powder where it will receive the full strength of the

primer, which will insure complete combustion and uniform shooting.

The elevation on the sights for the 30 caliber rifle for gallery work at 75 feet is from 300 to 400 yards; that for the 45 caliber Springfield is one hundred yards. The same elevation is maintained in all gallery shooting. The positions assumed represent the different distances. These elevations are not arbitrary. The soldier should ascertain that which is suited to his peculiarities and make a record for future use.

After firing a score, see that the rifle is thoroughly cleaned before returning it to the rack. A most excellent preparation for cleaning and preventing rust is made from a mixture of two-thirds coal oil to one-third of cosmoline oil. It is a safe plan to oil the rifle both inside and out after every handling, whether it be fired or not.

The Ordnance Department U. S. furnish the following suggestions for cleaning and care of the arm.

"As the residuum of smokeless powder, if not completely removed, corrodes the bore in a short time, care is required in cleaning the arm after firing.

"To clean the barrel, insert in the chamber a cartridge shell, the front end of which has been filled with a wooden plug, and close the bolt; clean the bore with rags saturated with soda water, or, if that is not attainable, with water; wipe thoroughly dry with clean rags; remove the bolt and cartridge shell; clean and dry the chamber, from the rear, in the same manner; finally oil both chamber and bore with cosmoline oil, leaving a light coating. When the jointed rod is used, remove the bolt, clean half of the bore from the muzzle and the remainder through the receiver, as above prescribed.

"If gas escapes at the base of the cartridge, it will probably enter the well of the bolt through the

striker hole. In this case the bolt mechanism must be dismounted, and the parts and well of the bolt thoroughly cleaned. Before assembling the bolt mechanism, the firing pin, barrel, and undercuts of sleeve, body of striker, well of bolt, and undercut of bolt collar should be lightly oiled.

"Many parts can generally be cleaned with dry rags; all parts after cleaning should be wiped with an oiled rag. The best method of applying oil is to rub with a piece of cotton upon which a few drops of oil have been placed, thereby avoiding the use of an unnecessary amount of oil; this method will, even in the absence of the oiler, serve for the cams of the cocking piece, bolt, gate lug, and carrier, and the bearing of the magazine spring of the gate hinge, all of which should be kept lubricated.

"Any part that may appear to move hard can generally be freed by the use of a little oil.

"The stock and hand guard may be coated with raw linseed oil and polished by rubbing with the hand."

No further description being necessary in the matter of the gallery and its appurtenances, the task of instructing the soldier in all the important branches of sighting and aiming drills must now be taken up so that he may commence the gallery work intelligently.

These exercises are interesting and are calculated to attract the soldier, and while they may be looked upon lightly by some, their importance cannot be overestimated.

The success which will attend the efforts of the Company officers in imparting these instructions, will depend largely upon the amount of energy bestowed and the degree of enthusiasm with which they enter upon the subject.

The theory should be first understood by them and

in practice they should display a degree of proficiency which will at once impress the soldier. After the officers have prepared themselves to impart the instructions, they should require every man in the Company to undergo the system laid down in the U. S. Army Firing Regulations which will be found briefly but plainly set forth in this book. Because a man is a fairly good shot with the rifle, and claims to know the practical end of it, is no reason for his being excused from the drill. If he carefully notes the instructions, he may for the first time discover how or why some of his shots which he thought were pulled for a bullseye, resulted in a magpie or an outer.

The sighting drill is the only thing which will make his errors apparent, and, as it is the basis of, and embodying as it does, the first great principle of marksmanship, it must be understood and mastered to attain success with the rifle.

PLATE G.

Fig. 1.

Previous to commencing this drill, a tripod, or some form of rest for the rifle must be provided, on which is placed a bag of sand, or some other substance which will admit of the rifle resting securely so that it may be moved or pointed in any desired direction.

A blackboard can also be made useful for this branch of the instruction, for on it, or in some other manner, an exaggerated diagram should be drawn representing the sights of the rifle, showing the various forms of sight which can be taken in aiming, so as to be thoroughly explained to the soldier before commencing the drill.

Fig. 2.
Full Sight.

Half Sight.

Fine Sight.

The coarse, the fine, and the half or medium sight should be drawn, showing the position of the bullseye as it should appear when looking through or over the notch of the rear sights. See Fig. 2 plate G.

The soldier should be informed that the proper amount of front sight to be taken varies somewhat with the differences in light and is also affected by the peculiarities of individual eyesight. He should also be cautioned that regular results in firing can only be obtained when the sight is so taken as to give to the front sight, as seen through the notch or aperture of the rear sight, a uniform appearance.

To obtain the necessary regularity in shooting, one of the three forms should be adopted and adhered to.

The coarse sight is liable to cause lack of uniformity, and the fine sight, except when the light is strong, cannot be taken with accuracy. The half sight not requiring so much light as the fine, and the horizontal line on the top of the notch of the rear sight affording a guide for regularity, should by most men be adopted. The same principle obtains in the use of the aperture or peep sight.

A shot fired when the sight is held to the right of the centre of the notch or aperture will cause it to strike to the right of the bull, while the reverse will be the case when held to the left.

A coarse sight will have the effect of causing a shot to strike high or above the bull, a fine sight resulting in a shot correspondingly low.

With these principles clearly understood, the soldier is ready to proceed with the sighting drill.

For this purpose the sandbag rest should be located about 20 feet from a wall, with the rifle on it pointed at a sheet of white paper placed thereon, and about on a level with the piece. The instructor will direct the marker to place a black paster in a position where it can be easily aimed at, and when he has carefully sighted the rifle he will require each soldier to approach and place his eye so as to observe the

manner in which the sights are aligned with the object aimed at. He will question each as to the character of sight and explain any error in judgment.

After completing this exercise the soldier should be required to sight the rifle himself and inform the instructor of the character of sight taken, which if correct and apparently understood, he is ready to demonstrate by the next exercise that he possesses the required qualifications to become a soldier.

For the purpose of this instruction use a black disk ½ inch in diameter attached to the end of a rod about one foot in length, so mounted that the under side will rest perfectly flat against the paper. There must be a hole in the centre of the disk large enough to admit the point of a lead pencil. With this, the marker who is stationed at the paper which represents the target, will, by request of the soldier, move it in any direction, being governed by the motion of the soldier's hands until the disk is brought to that point in line with the sight, where it rests directly at its lower edge, in the manner recently explained to him. When satisfied that the aim is correct he will call to the marker, MARK!

The marker will be careful to insert the point of a lead pencil in the centre hole and make a distinct mark. The soldier will straighten himself, and when ready will resume his position without touching the rifle and repeat the exercise for the second and third time.

The instructor will now take the soldier to the target and show him the effect of his aim. To make whatever irregularity there may have been the more apparent, he will with a pencil draw a line connecting the three shots, and the triangle formed will indicate the degree of regularity of his sighting. If the result was like Fig. 1, Plate G, it would

indicate that the top mark was taken with a coarse sight, the bottom with a fine, and the one to the left a half sight, but to the left of the centre. Fully explain the defects and have the soldier make another trial. In fact he should be kept at the exercise until he is able to group his aim within a ½ inch circle.

This exercise may be continued with beneficial results after the soldier has become familiar with the sighting drill and for the convenience of those who care to continue the exercise, a tripod or some handy support for the rifle should be kept in the Armory where the men could avail themselves of its use.

Having established his right to proceed in the drills, the soldier is now ready for the position and aiming exercises.

"These drills are intended to exercise the muscles of the arms, to teach the proper methods of holding the piece and to give the soldier, whether standing, kneeling or lying down, a perfect command of his rifle and an unconstrained position of the body; also to teach steadiness both of person and rifle, and to establish between the hand and the eye such a prompt and intimate connection as will assure the finger acting on the trigger at the proper moment without causing any derangement of the direction of the piece."

It is not the intention of this book to fully set forth in all its details the instructions embodied in the Regulations for the Army relative to gallery practice, but to introduce the general principles, and lay before the soldier in an abbreviated form, all that will be necessary to qualify him for such practice and leave a firm foundation for work on the range.

The instructor should inform the soldier that there are but four positions recognized in firing, viz., standing, kneeling or sitting, and prone.

The standing position is for all practice up to and including 200 yards, the kneelng or sitting at 300, and for all other distances the prone is to be used.

The positions required in gallery practice are the same as used on the range.

Plates II, Fig. 1; II, Fig. 2; III, Fig. 1; III, Fig. 2; IV, Fig. 1; IV, Fig. 2, are introduced for the purpose of showing the various standing positions which may be assumed in firing. The soldier must be impressed with the necessity of standing erect and facing the targets, until the order to commence firing is given. He should then bring his right foot to the rear, from 6 to 10 inches, so as to stand firm, facing half right. Bring the piece to the shoulder and up to a height which makes it unnecessary to bend the head but slightly forward to bring the eye in line of sight. The piece will rest better if the elbow of the right arm is slightly elevated.

PLATE II.

Fig. 1.—Firing Standing—Body Rest.

PLATE II.

Fig. 2.—Firing Standing—Body Rest.

PLATE III.

Fig. 1.—Firing Standing—Half Arm Extension.

PLATE III.

Fig. 2.—Firing Standing—Half Arm Extension.

PLATE IV.

Fig. I. -Firing Standing--Full Arm Extension.

PLATE IV

Fig. 2.—Firing Standing—Full Arm Extension.

The manner of holding the rifle with the left hand, whether with the arm extended or with it against the body, is purely a matter of individual preference. All of the positions should be tried and the one found to be the most comfortable, adopted.

Good shooting cannot be done in a constrained position.

After having determined how the piece is to be held the practice of snapping should be encouraged before any firing is done. Holding the piece will soon cause fatigue, as it brings into play a new set

of muscles. An important part of the practice consists in educating these muscles so as to prevent fatigue.

Not until after the soldier has been drilled in sighting and snapping at the target should he be permitted to fire.

The above suggestions, while referring particularly to the 200 yard or off hand positions, apply with equal force to the subsequent training. For 300 yard work the kneeling or sitting position is required.

PLATE V.

Fig. I.—Firing Kneeling.

Except for volley firing the kneeling position is very little used, as better results are obtained by assuming the sitting position. See Plates V, Fig. 1; V, Fig. 2; VI, Fig. 1; VI, Fig. 2. The figures so clearly show how these positions may be assumed that an extensive description of them is unnecessary.

PLATE V.

PLATE VI.

Fig. 1.—Firing Sitting Down.

PLATE VI.

Fig. 2.—Firing Sitting Down.

A very convenient position not shown in the plates may be assumed by a person of spare build by placing the left arm over the left knee and aiming the rifle over the elbow where it rests on the knee-joint, holding the piece only by the right hand, with the left grasping the wrist of the right. Some catch hold of the sleeve. This position is assumed by most of the expert range shots.

The prone position is the easiest and most comfortable of any required of the soldier in target practice, and is shown in Plate VII, Figs. 1 and 2. It is assumed by lying flat, face downward with the legs spread well apart with toes turned outward. Some prefer to cross their legs. This feature should be left to the individual preference of the soldier. The legs should be inclined well to the left, so that

in aiming the piece it points at an angle of about thirty degrees with the body. It should never be

PLATE VII.

Fig. 1.—Firing Lying Down.

Fig. 2.—Firing Lying Down.

fired unless pointing somewhat obliquely to the body as the recoil from a full charge fired otherwise is liable to painfully injure the shoulder.

To assist in securing greater steadiness in aiming, the use of the gun sling is suggested. The new firing regulations of the Army permit its use at any distance, provided it is not detached from the swivel of the lower band and the butt swivel. Formerly it was only permitted to be used at the mid and long ranges.

Impress upon the soldier the importance of sighting, aiming and position drills.

He should practice them until he obtains the

mastery of his piece so that he can aim and hold it steadily and pull the trigger at the proper moment. There is but little time to devote to such instruction on the range when ordered there for class practice. Briefly and in conclusion, remember the following points, as they are essential to good marksmanship. Aim at the lower edge of the bullseye, leaving a slight margin of white to be seen between it and the front sight and always take the same amount of sight both front and rear. Learn the trigger pull, and pull it gradually, never with a jerk. When ready to fire take a long breath, and if aim be steady pull the trigger before beginning to tire. Take the gun down if not satisfied with aim. Better take more time and not throw away a shot. The regulation trigger pull for the 45 caliber rifle is 6 lbs., that for the 30 caliber, 3 lbs.

After the soldier has become familiar and accustomed to the gallery, effort should be made to retain his interest, and this can best be done by adopting a schedule of practice and qualification, and the introduction of competitions between teams and individuals.

General Orders No. 20, issued for the guidance of the National Guard of the District of Columbia is given, that an idea may be gained of the importance attached to gallery practice, and for the further suggestions which it may contain for the benefit of those contemplating the introduction of gallery work.

GENERAL ORDERS No. 20.

HEADQUARTERS DISTRICT OF COLUMBIA MILITIA,

Washington, D. C., December 4, 1902.

I. Gallery practice for the ensuing year will be conducted as follows:

a. A full score will consist of five shots each at

200 yards standing, 300 yards kneeling or sitting, and 500 yards and 600 yards lying prone. Two full scores will be required, making forty shots in all.

b. Gallery qualifications shall be not less than 80 per cent. of the possible score, but scores made in the gallery will in the future not be considered in connection with classification. They will, however, be reported on the annual report of target firing.

c. Any officer or soldier who fails to make 50 per cent. of the possible score in the gallery will not be permitted to fire a score for qualification on the range.

d. A copy of all scores will be kept by the card-record system, and to enable this to be done Inspectors of Rifle Practice will furnish the Superintendent of the gallery with a copy of all scores made in voluntary and ordered practice.

e. Company commanders will see that all recruits are thoroughly taught the sighting, position, and aiming drills before permitting them to appear with the company for gallery practice. They will also regularly practice their companies in those drills, in their armories, at least fifteen minutes on each company drill night during the months of January, February, March, and April, 1903, reporting the same on their monthly drill and parade reports.

II. The following schedule for gallery practice will be observed for the months of January, February, March, and April, 1903, during which period the prescribed practice will be completed:

The 1st Battalion and 1st Separate Battalion will practice in the gallery at their armories, under schedules to be prepared by the Battalion Commanders.

2d Battalion, first and second Thursdays of each month.

3d Battalion, second Saturday of each month.

4th Battalion, first and second Tuesdays of each month.

5th Battalion, first and second Mondays of each month.

6th Battalion, first and second Wednesdays of each month.

Engineer Corps, first and second Wednesdays of each month.

Naval Battalion, first and second Fridays of each month.

The general staff, the field and staff officers, and noncommissioned staff of regiments and battalions, the fourth Wednesday of each month.

The line officers of the First Regiment and Naval Battalion, third Thursday of each month.

The line officers of the Second Regiment, third Friday of each month.

III. Volley firing will follow the individual practice at each range, three volleys being fired by each company, kneeling; time limit, forty seconds. A proper record of the results, to be entered in the Company Target Record Book, will be certified by the Inspector of Rifle Practice and included in the annual report of known-distance target practice.

At the end of the gallery season a trophy, to be held for the year, will be awarded the company making the highest average in volley firing. The score of no company will be considered in connection with the competition where less than 60 per cent. of its members participate in the firing. The Inspector of Rifle Practice will require a certificate from the company commander as to the number of men on the rolls of the companies which announce themselves in the competition.

IV. Companies will be reported at the Rifle

Gallery promptly at 8 o'clock p. m., in undress uniform, armed and equipped.

V. The Rifle Gallery will be opened every day, except Sunday, after December 8, 1902, from 3 to 5 o'clock p. m., for voluntary practice. Ammunition will be furnished on the payment of one cent for each round. An inspector of rifle practice will be in attendance, and, on request, will certify scores to the captains of companies, to be credited as part of the required practice. Company commanders may obtain permission to use the gallery for target practice on unassigned nights by applying to the Superintendent.

VI. The following rifle matches are announced and will be shot in the gallery on dates specified in paragraph VII.

COMPANY MATCH

Teams of five: Ten shots per man, at 200, 300, 500, and 600 yards; to be fired in two stages of five shots each.

BATTALION MATCH

Teams of ten: Ten shots per man at 200, 300, 500, and 600 yards; to be fired in two stages of five shots each.

REGIMENTAL MATCH

Teams of ten: Ten shots per man at 200, 300, 500 and 600 yards; to be shot in two stages of five shots each.

REGULATIONS

All organizations desiring to compete may do so.

Each team will be commanded by a commissioned officer.

The cleaning of rifles between ranges will not be permitted.

In addition to the foregoing matches, there will be

a Regimental Team match shot in the rifle gallery on December 15, 1902, each team to consist of twenty men from the 1st and 2d Regiments and 1st Separate Battalion, each company to be represented; ten shots per man, at 200 yards; to be fired in two stages of five shots each.

VII. The rifle matches indicated in paragraph VI will be shot in the gallery on the following dates, commencing at 8 o'clock p. m.

COMPANY MATCH

200-yard stage

Monday, January 19.—Companies A, B, C, and D, 1st Battalion; Companies A, B, and D, 2d Battalion; Company A, 3d Battalion; Companies A, B, C, and D, 5th Battalion.

Tuesday, January 20.—Companies A, B, C, and D, 4th Battalion; Companies A, C, and D, 6th Battalion; Companies A, B, C, and D, 1st Separate Battalion; First and Second Divisions, Naval Battalion.

300-yard stage

Monday, February 16.—Companies A, B, C, and D, 1st Battalion; Companies A, B, and D, 2d Battalion; Company A, 3d Battalion; Companies A, B, C, and D, 5th Battalion.

Tuesday, February 17.—Companies A, B, C, and D, 4th Battalion; Companies A, C, and D, 6th Battalion; Companies A, B, C, and D, 1st Separate Battalion; First and Second Divisions, Naval Battalion.

500-yard stage

Monday, March 16.—Companies A, B, C, and D, 1st Battalion; Companies A, B, and D, 2d Battalion; Company A, 3d Battalion; Companies A, B, C, and D, 5th Battalion.

Tuesday, March 17.—Companies A, B, C, and D, 4th Battalion; Companies A, C, and D, 6th Battalion; Companies A, B, C, and D, 1st Separate Battalion; First and Second Divisions, Naval Battalion.

600-yard stage

Monday, April 20.—Companies A, B, C, and D, 1st Battalion; Companies A, B, and D, 2d Battalion; Company A, 3d Battalion; Companies A, B, C, and D, 5th Battalion.

Tuesday, April 21.—Companies A, B, C, and D, 4th Battalion; Companies A, C, and D, 6th Battalion; Companies A, B, C, and D, 1st Separate Battalion; First and Second Divisions, Naval Battalion.

BATTALION MATCH

200-yard stage.—Monday, January 26.
300-yard stage.—Monday, February 23.
500-yard stage.—Monday, March 23.
600-yard stage.—Monday, April 27.

REGIMENTAL MATCH

200-yard stage.—Friday, January 30.
300-yard stage.—Friday, February 27.
500-yard stage.—Monday, March 30.
600-yard stage.—Wednesday, April 29.

By command of Brigadier-General Harries:

THEODORE MOSHER,
Adjutant-General.

NOTES.

In addition to the Ordnance Department remarks, on the cleaning and care of the arm, the following are suggested:

1. Clean the rifle after every ten shots by blow-

ing down the muzzle and running two rags through. This is when you intend shooting other scores. If through shooting, blow and rub until the rag ceases to be black, then use plenty of oil for the barrel and see that the breech mechanism gets its share. Be sure to see that the bolt is down when the rifle is placed in the rack.

2. Remember that the gallery is only to teach positions and steadiness.

3. An expert gallery shot soon masters the mysteries of the range.

4. Exercise the muscles of the left arm so they will not easily become gun tired.

5. Riflemen have found it convenient to liken the target to the face or dial of a watch. A shot striking the centre is called a pin wheel, while one which strikes under or over the pin wheel is called a 6 or 12 o'clock shot of the value the division of the target hit may give it. It is desirable that the novice acquaint himself with these terms, as he will hear only of a 7 o'clock centre, a 2 o'clock bull, or an 11 o'clock inner or mag. when a shooter speaks of the value and location of his shot.

AN EXAMPLE OF WHAT THE AIMING AND SIGHTING DRILL WILL ACCOMPLISH

As has been previously stated, the importance of the aiming and sighting drills cannot be overestimated.

The late Major J. M. Pollard, Inspector General of Rifle Practice, D. C. Militia, a veteran marksman and an acknowledged authority on rifle matters, stated, that "Practice in aiming and sighting, if carefully followed, is almost as beneficial as actual range practice, only it must be well and conscientiously done." The experience of the famous Haymaker Rifle team of the Second Battalion of Infantry, Maryland National Guard, is cited as an instance of the truth of his statement.

This team, composed of men of fair ability as marksmen, visited Chicago in the fall of 1887 to take part in the Interstate and so-called International contests held under the auspices of the International Military Encampment Association.

Under a promise of ample opportunity for range practice at Chicago the team left for the West without having had a single practice over the distances, trusting to the six days' work over the range there to place them in trim to meet the flower of the Western

National Guardsmen. The dismay and consternation of Colonel E. H. Wardwell, the team Captain, may better be imagined than described, when he discovered that the range was incomplete and could not be used until the day of the opening contest.

A council was held and the situation discussed in all of its bearings. Some were for returning home, but the Colonel, knowing what might be accomplished through conscientious aiming and firing practice, persuaded the council, in view of the fact that the Governor expected him to return victorious, to remain and make the trial.

It was decided to have at least one practice a day over the distances to be shot over in the match, namely, 200, 500 and 600 yards; accordingly they were staked off on the level common immediately back of the fair grounds, and handy to the location of the camp, and the targets were fastened to the rear of the Fair Ground stables. Nearly a riot was precipitated by some of the stable men tearing the targets down, as they protested that they were not going to risk their lives by working in the stables while the team fired at the targets where they were located. They were soon assured that no harm could come to them from the blank cartridges to be used, and the practice proceeded without incident save that it attracted considerable attention from the visitors from the surrounding settlement.

The team Captain decided that the practice should be conducted with all the care which would have characterized range work. Shooting partners were selected and the coach stationed at the firing point to give the necessary information required of such an officer.

The windage and elevation to be used by each individual was imparted privately to the statistical

officer for the purpose of discovering the amount of information each possessed upon these important points. All pledged themselves to announce the exact value of each shot, as pulled, and with these details arranged the practice proceeded. It might be well to state here that an expert rifleman, atmospheric conditions being fairly good, can call his shots, or tell where they should strike the target, judging from the way his rifle was held when the trigger was pulled.

The team men fired the ten blank cartridges furnished them for each distance with all the deliberation and care which would have characterized them in actual practice, and after the day's work was over and the result announced, the features of the contest were discussed with an unusual amount of interest.

This daily practice was continued after the arrival of the Western Guardsmen fresh from contests over their State ranges. They looked on, winked, smiled and walked away, talking deprecatingly of the chances of the silly Marylanders. The Colonel encouraged his men to believe that they were going to win, notwithstanding the great odds which were against them. Each team stood on an equal footing so far as the condition of the match was concerned, as there were no sighting shots permitted. It was "blood" from the start.

The morning of October 12th, the day of the match dawned clear and bracing and there was a perceptible inclination towards buck fever on the part of some of the team, but it soon disappeared and confidence was restored when the result of the scores of the first two men showed, Haymakers 81, Minnesota 75, Michigan 74, Iowa 62, with the Indians less than 20 points to their credit. They withdrew from the contest before the 200 yard stage was finished, as

their shooting was as wild as the shooters and dangerous to residents in the outlying country. When the scores at this range were footed up it was found that Michigan was in the lead with a total of 368, Maryland 364, Minnesota 355, and Iowa 335, but at the end of the 500 yard score, victory was conceded to the Marylanders, as they were 14 points to the good. The confidence was not misplaced, as the lead was increased 9 points at 600 yards, and victory rested on the banner of the team which had not fired a single ball cartridge out of their rifles for ten days previous to the match.

The team Captain and coach was the recipient of many congratulations for his plucky and successful uphill fight.

He had won a victory by a conscientious practice in aiming, sighting and snapping, as this exercise developed and strengthened the muscles to as high a degree as though the ball cartridge had been used.

One feature of the victory was noticeable in the fact that the officer whose dummy scores showed the largest aggregate in the practice made the highest individual score in the match.

LOADING MECHANISM OF THE U. S. 30 CALIBER MAGAZINE RIFLE

Through the courtesy of General William Crozier, Chief of Ordnance, U. S. A., illustrations of part of the loading mechanism of the U. S. Magazine Rifle, Model of 1899, are produced for the information and instruction of the soldier, with descriptive language employed by the Ordnance Department in reference thereto, which, in part, appears under the following headings. First—the Assembled Parts and their Operations. Second—Precautions. Third—Dismounting and Assembling by Soldier.

THE ASSEMBLED PARTS AND THEIR OPERATION

Most of the operating parts may be included under the Bolt Mechanism and the Magazine Mechanism.

The Bolt Mechanism consists of the bolt, sleeve, extractor, extractor rivet, safety lock, firing pin, striker, and main spring.

The bolt moves backward and forward and rotates in the well hole of the receiver; it carries a cartridge, either from the magazine or one placed by hand in front of it, into the chamber and supports its head when fired. The locking lug will sustain any powder pressure liable to occur, but if worn by usage or upset by excessive pressures the rear end of the guide rib will bear on the locking shoulder of the receiver, permitting the continued use of the arm with safety.

The sleeve unites the parts of the bolt mechanism; its rotation with the bolt is prevented by its arm occupying the opening between the walls of the receiver.

The hook of the extractor engages the rim of the cartridge case and retains the head of the latter in the countersink of the bolt until the case is ejected. The extractor spring, engaging its lip on

the receiver, prevents the hook from releasing the rim of the cartridge case, when the latter is being started from the chamber. The extractor pin holds the bolt open for convenience in loading when using single-loader fire.

The safety lock, when turned to the left, is inoperative; when turned to the right, the point of its spindle enters the notch in the bolt collar and locks the bolt. If turned to the right when the piece is cocked, its cam forces the firing pin slightly to the rear, out of contact with the sear, so that, if the trigger be pulled, the sear, when the trigger is released can rise to catch the firing pin, when the safety lock is turned to the left, thereby preventing accidental discharge. If turned to the right, when the piece is not cocked, it locks the firing pin as well as the bolt.

The gun having been discharged, to remove the empty cartridge case, reload and fire, the bolt mechanism operates as follows:

To open the bolt raise the handle until it comes into contact with the sleeve, then pull it directly to the rear until the locking lug strikes the locking shoulder of the receiver.

Raising the handle rotates the bolt. This separates the locking lug from the shoulder of its recess in the receiver, with which it is brought into close contact by the powder pressure. This separation is made easy by the slight inclination to the axis of the receiver of the vertical planes containing the rear surface of the locking lug and the shoulder of its recess.

The rotation also causes the cocking cam of the bolt to force the firing pin to the rear, withdrawing the point of the striker into the bolt. The rotation of the firing pin is prevented by the lug on the cocking piece projecting through the slot in the

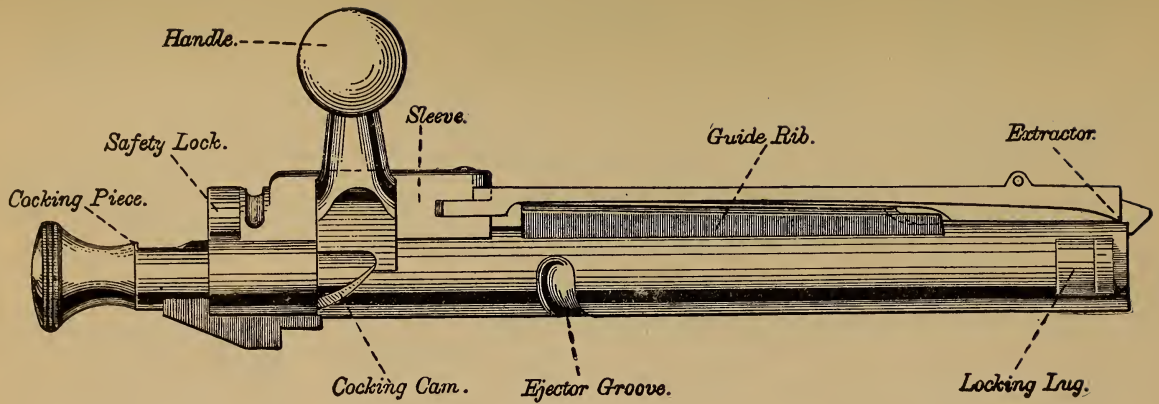

Handle.
Sleeve.
Safety Lock.
Guide Rib.
Extractor.
Cocking Piece.
Cocking Cam.
Ejector Groove.
Locking Lug.

FIG. III

sleeve into its groove in the receiver. As the sleeve remains longitudinally stationary with reference to the bolt, this rearward motion of the firing pin, and consequently of the striker, will begin the compression of the main spring, since the rear end of the latter bears against the front end of the barrel of the sleeve, and the front end against the rear end of the striker.

When the bolt handle strikes the sleeve, rotation ceases, during which the firing pin has been forced to the rear by the cocking cam on the bolt until the sear notch of the cocking piece has passed the point of the sear, the cocking piece nose entered the notch in the rear end of the bolt, and the main spring partly compressed; the locking lug will then be out of its recess and the guide rib under the extractor.

When the bolt handle is raised into contact with the cam on the cocking shoulder of the receiver, a direct motion to the rear will be combined with the rotation, so that the cartridge case will be started from the chamber by the action of this cam.

The bolt is then drawn directly to the rear, the extractor and guide rib move along the left wall and through the opening between the two walls of the receiver. The parts are retained in position by the cocking piece nose remaining in the notch in the rear end of the bolt, and the main spring is partly compressed.

The relative position of the parts of the bolt mechanism is then shown in Fig. 111, page 55.

To close the bolt, push the handle forward until it strikes the cocking shoulder, then turn it down until it comes into contact with its seat in the receiver. As the handle is turned down, the rear end of the guide rib, traveling along the cam of the locking shoulder of the receiver, will move the bolt forward

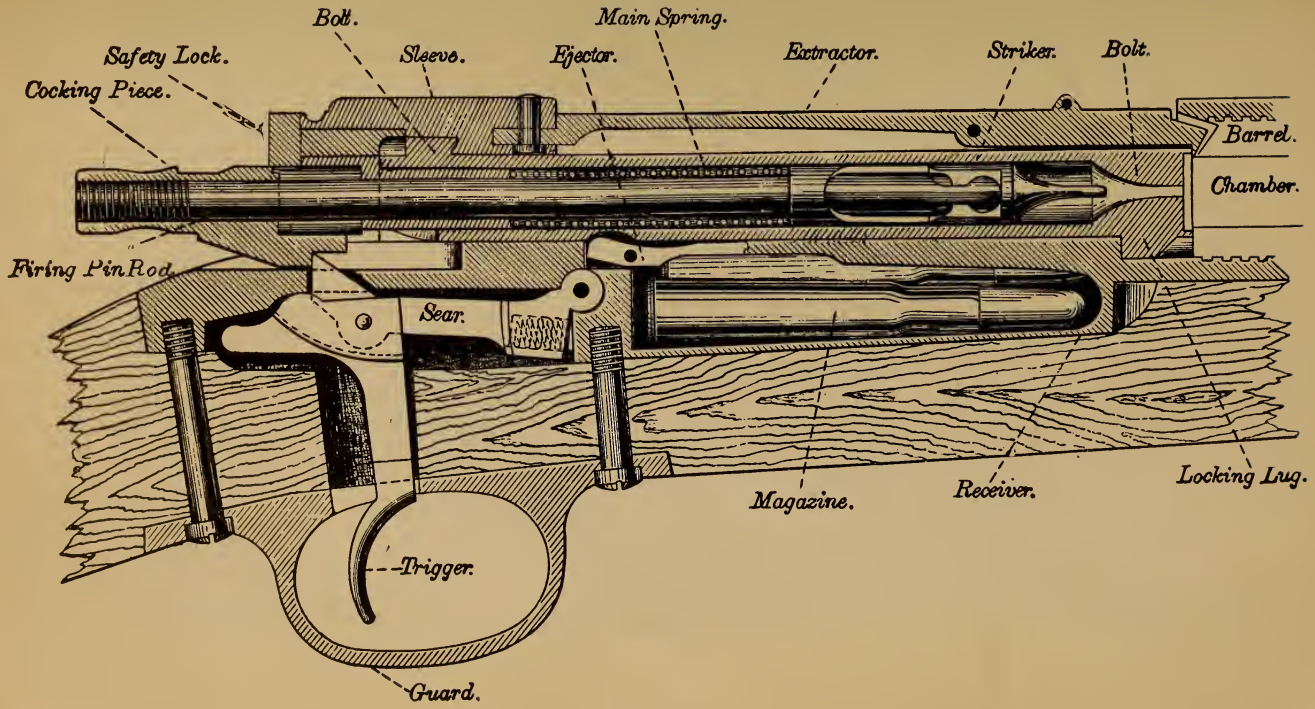

Bolt.
Main Spring.
Safety Lock.
Sleeve.
Ejector.
Extractor.
Striker.
Bolt.
Cocking Piece.
Barrel.
Chamber.
Firing Pin Rod.
Sear.
Locking Lug.
Magazine.
Receiver.
Trigger.
Guard.

FIG. 112

until the locking lug comes into contact with the cam of its recess in the receiver, which moves the bolt slightly forward into its closed position. As all movement of the firing pin is prevented by the point of the sear engaging the sear notch of the cocking piece, the forward movement of the bolt, produced by these cams, completes the compression of the main spring, the seating of the cartridge in the chamber, and forces the extractor hook over the rim of the cartridge case.

In closing the bolt, a cartridge from the magazine, if using magazine fire, or one placed by hand in the well of the receiver in front of the bolt, will be carried forward into the chamber. The gun is then ready to be fired.

The position then occupied by the parts is shown in Fig. 112, page 57.

When the bolt is rotated so the guide rib is under the extractor, the front end of the guide rib engages a lug on the underside of the extractor and holds the latter against the left wall of the receiver so the hook, as the bolt is closed, will enter its notch in the receiver and barrel.

To pull the trigger the finger-piece must be drawn to the rear until contact with the receiver is transferred from its bearings to the heel which gives a creep to the trigger, and then until the point of the sear is withdrawn from in front of the cocking piece.

The heel of the ejector rises into its groove in the bolt, but just before the bolt is drawn fully to the rear, the end of the groove suddenly forces the heel down, causing the point to rise in front of the bolt and strike the cartridge case. As the bolt is closed, the heel rises again into its groove, the curved portion of which permits the bolt to rotate

without operating the ejector. The upper surface of the front end of the ejector is shaped so as to throw the cartridge case out of the receiver, upward and to the right.

It is to be noted that, in this system of bolt mechanism, the compression of the main spring, the seating of the cartridge in and the starting of the empty case from the chamber, are entirely done by the action of cams.

The piece may be cocked either by raising the bolt handle until it strikes the sleeve and then immediately turning it down, or by pulling the cocking piece directly to the rear.

In firing, unless the bolt handle is turned fully down against its seat in the receiver, the cam on the cocking piece will strike that in the rear end of the bolt and the energy of the main spring will be expended in closing the bolt instead of on the primer; this prevents the possibility of a cartridge being fired until the bolt is fully closed.

The opening and the closing of the bolt should each be done by one continuous motion.

PRECAUTIONS

If it is desired to carry the piece cocked, with a cartridge in the chamber, the bolt mechanism should be secured by turning the safety lock to the right.

To obtain positive ejection, and to insure the bolt catching the top cartridge in the magazine, when using magazine fire, the bolt must be drawn fully to the rear in opening it.

If a cartridge is pushed from the magazine partly into the chamber, and then the bolt fully drawn to the rear, that cartridge will remain in the well and chamber, and a second will rise from the magazine in front of the bolt. If the bolt is again pushed

forward, the second cartridge will strike the first and produce a *jam*. To avoid this always close the bolt on a cartridge in front of it to insure the action of the extractor and ejector on that cartridge when the bolt is opened.

If a jam occurs, draw the bolt fully to the rear and, with the right hand, remove the first cartridge and close the bolt; if the first cartridge has been pushed into the chamber, draw the bolt to the rear, with the thumb of the right hand push the second cartridge back into the magazine and cut it off; then close the bolt on the first cartridge.

Unless the bolt handle is fully turned down into contact with its seat in the receiver, when the trigger is pulled the nose of the cocking piece will strike against the cocking cam of the bolt, and the energy of the main spring will be expended in closing the bolt instead of in igniting the primer, causing a miss-fire. Care should be taken not to raise the bolt handle with the forefinger if the trigger is pulled with the middle one.

It is essential for the proper working and preservation of all cams that they be kept lubricated.

DISMOUNTING AND ASSEMBLING BY SOLDIER

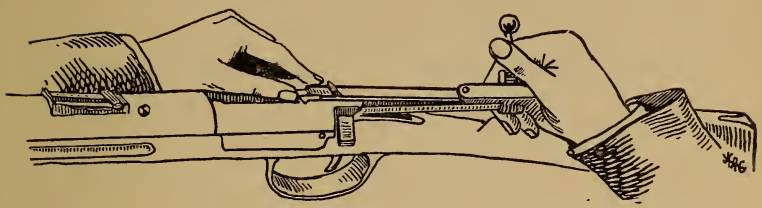
The bolt and magazine mechanism can be dismounted without removing the stock. The latter should never be done except for making repairs, and then only by some selected and instructed man.

TO DISMOUNT BOLT MECHANISM

1. Draw the bolt fully to the rear, then place the piece across hollow of left arm.
2. Lift the front end of hook of extractor off bolt with left thumb, and at the same time turn bolt

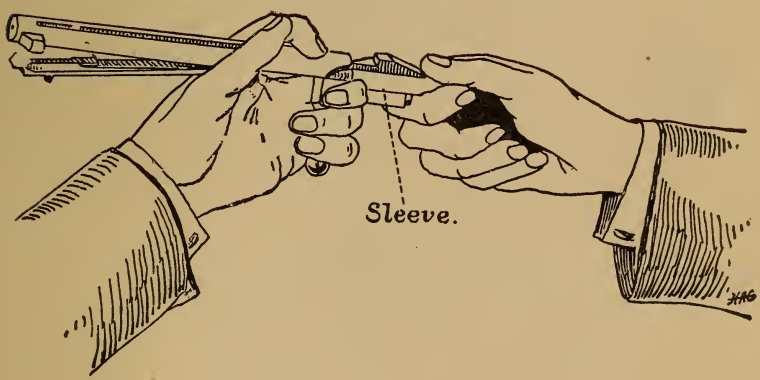
handle to left with right hand (see Fig. 117). The bolt can then be drawn from the receiver.

FIG. 117



3. Take bolt handle in left hand, back of hand down, bolt upside down. Grasp cocking piece with right hand (Fig. 118).

FIG. 118



4. Slightly draw back cocking piece and turn it toward the operator until the firing pin can be removed from the bolt.

5. Take firing pin in left hand and bear down on point of striker with right thumb until it leaves the firing pin; remove mainspring from firing pin and the latter from sleeve.

TO ASSEMBLE BOLT MECHANISM

1. Observe that the safety lock is turned to the left. Reverse the order of the steps of fifth operation in dismounting.

2. Grasp the bolt handle in left hand as in third operation in dismounting and the firing pin in right hand, extractor uppermost. Insert firing pin in bolt.

3. Grasp handle of bolt with fingers of both hands, bolt directed downward, and with both thumbs on the rear of safety lock (Fig. 119), push strongly forward and turn to right with thumbs until the arm of the sleeve engages the collar of the bolt.

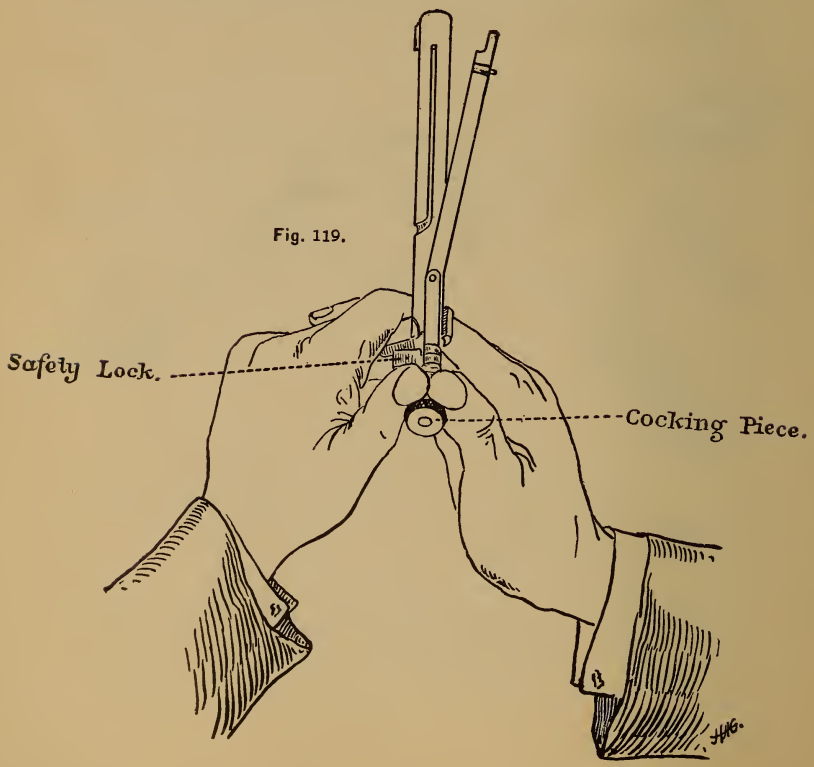
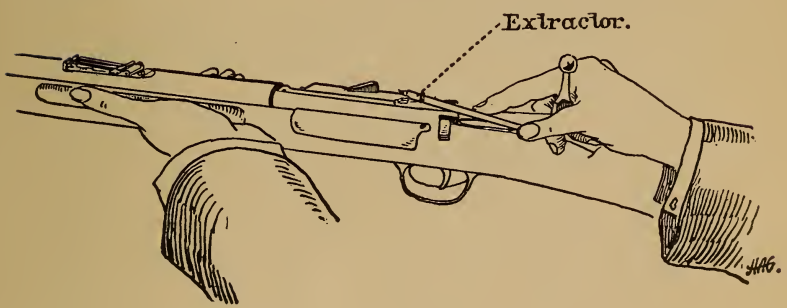


Fig. 119.

4. Grasp bolt and cocking piece as in third operation for dismounting. Draw back and turn cocking piece from the operator until its nose enters the notch on the rear end of the bolt (see Fig. 118).

5. Take bolt in right hand and introduce it into the receiver, keeping the extractor lifted with the right thumb (Fig. 120). Turn bolt to right and at the same time press strongly with first finger against right side of extractor.

FIG. 120



TO DISMOUNT MAGAZINE MECHANISM

1. The gate being closed, engage the flanged head of a cartridge case under the lug on the front end of the hinge bar head and turn the latter toward the gate, out of its seat; then bear heavily on the gate with the palm of the right hand, to overcome the pressure of the magazine spring, and, with the left, press forward against the lug, drawing the hinge bar pin from the receiver.

2. Remove the gate, magazine spring, carrier and follower.

TO ASSEMBLE MAGAZINE MECHANISM

1. Hold the piece with right side uppermost. Insert arbor of carrier into its hole in receiver and

place end of left thumb across magazine to prevent carrier swinging into the latter.

2. Place magazine spring in its channel, convex side up, rounded end to the rear, particularly observing that the lip at its front end rests in the notch on heel of carrier.

3. Place gate in its seat, lug entering between carrier and magazine spring. Remove left thumb and at the same time press gate against magazine spring with right hand.

4. Insert hinge bar pin in front hinge hole in receiver with left hand, and press gate down strongly until the pin can be pushed through gate into rear hinge hole.

5. After the hinge bar pin is fully home, turn the head into its seat by opening the gate.

THE NATIONAL RIFLE ASSOCIATION OF AMERICA, AND THE SCHOOLS

The National Rifle Association of America, at its annual meeting held in the City of New York, on Tuesday, February 10, 1903, resolved to take action to secure the affiliation with it of colleges and institutions of learning of the United States, as it was deemed to be desirable to extend its influence and further accomplish the ends for which it was organized.

It believes the education of the American youth to become expert with the rifle to be most desirable; therefore its influence will be extended, limited only by its ability to assist in equipping those schools and educational institutions which are not now provided with the rifle. This move is actuated by purely patriotic motives, and it further believes that an opportunity should be afforded the rising generation to become useful citizens, upon the broad principle that the citizen who is expert with the rifle is a better citizen than he who is not, as, at a moment's notice he is prepared to defend his State or National Government from enemies within or without.

At the present time there are eighty-three Universities and Colleges in the United States to

which Army Officers are detailed as Professors of Military Science. Congress has by enactment provided for this detail and for the supply of ordnance and ordnance stores to assist in the training of the young men connected therewith.

How much or how little of the time allotted to this training is devoted to gallery or rifle practice it is difficult to ascertain, but it is safe to assert that it is a negative feature, when in fact it should be of the first importance.

It would appear from the Statute authorizing these details and issues, and the regulations issued by the Commanding General of the Army, which appear hereinafter, that a larger number of Colleges than eighty-three may obtain the benefits of the law by complying with the provisions mentioned.

There are thousands of educational institutions, other than the favored ones, which it is believed would avail themselves of the opportunity of being armed and equipped, if the way was opened for them to do so.

To meet such cases, and to enable the Secretary of War, upon proper application, and a suitable bond for the care and preservation of the ordnance and ordnance stores issued, to make such issues, Congress will be asked to amend the present law.

Many foreign countries are giving the subject of rifle practice in their schools a large amount of attention, but there is no better field for this much neglected subject than that offered in our own country, and yet there are few branches outside of routine school work which may be introduced with better and more beneficial results than the training of the pupils in the use of the rifle.

The system for such training is set forth hereinbefore in such a plain and comprehensive manner that

it will appeal to the scholar and retain his interest until the desired object is accomplished.

When this publication was projected, the thought of including within its scope rifle instructions to schools and educational institutions did not occur to the publishers, but when the matter was brought to their notice and the great and beneficial results and possibilities began to force themselves upon their attention, it was seen to be a grand opportunity to do a great missionary work in a field which had long been overlooked and neglected.

As the colleges are armed with what is known as the Cadet rifle, .45 caliber Springfield, it is presumed that no provision will be made for the issue in their stead of the new .30 caliber Magazine for an indefinite period. Those who have used the Cadet rifle speak of its accuracy for gallery and range work up to 600 yards as being first class. The Laflin & Rand Powder Company in the furtherance of the object for which this book is issued will be pleased to furnish any other information which may be required or deemed to be necessary.

A letter upon the subject will receive prompt reply.

The law relative to equipping colleges and universities is given in General Orders No. 94.

GENERAL ORDERS No. 94

HEADQUARTERS OF THE ARMY,
ADJUTANT GENERAL'S OFFICE,
Washington, August 9, 1902.

I.—By direction of the Acting Secretary of War, the following laws, regulations and instructions governing the detail of officers of the Army at educational institutions are published for the information and government of all concerned:

[As amended by act approved September 26, 1888.]

"SEC. 1225. The President may, upon the application of any established military institute, seminary or academy, college or university, within the United States, having capacity to educate at the same time not less than one hundred and fifty male students, detail an officer of the Army or Navy to act as superintendent, or professor thereof; but the number of officers so detailed shall not exceed fifty from the Army, and ten from the Navy, being a maximum of sixty, at any time, and they shall be apportioned throughout the United States, first, to those State institutions applying for such detail that are required to provide instruction in military tactics under the provisions of the act of Congress of July second, eighteen hundred and sixty-two, donating lands for the establishment of colleges where the leading object shall be the practical instruction of the industrial classes in agriculture and the mechanic arts, including military tactics; and after that said details to be distributed, as nearly as may be practicable, according to population. The Secretary of War is authorized to issue, at his discretion and under proper regulations to be prescribed by him, out of ordnance and ordnance stores belonging to the Government, and which can be spared for that purpose, such number of the same as may appear to be required for military instruction and practice by the students of any college or

university under the provisions of this section, and the Secretary shall require a bond in each case, in double the value of the property, for the care and safe keeping thereof, and for the return of the same when required:" *Provided*, That nothing in this act shall be so construed as to prevent the detail of officers of the Engineer Corps of the Navy as professors in scientific schools or colleges as now provided by act of Congress approved February twenty-sixth, eighteen hundred and seventy-nine, entitled "An act to promote a knowledge of steam-engineering and iron ship-building among the students of scientific schools or colleges in the United States;" and the Secretary of War is hereby authorized to issue ordnance and ordnance stores belonging to the Government on the terms and conditions hereinbefore provided to any college or university at which a retired officer of the Army may be assigned as provided by section twelve hundred and sixty of the Revised Statutes.

An Act To amend section twelve hundred and twenty-five of the Revised Statutes, concerning details of officers of the Army and Navy to educational institutions.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Section twelve hundred and twenty-five of the Revised Statutes, concerning details of officers of the Army and Navy to educational institutions, be, and the same is hereby, amended so as to permit the President to detail, under the provisions of said act, not to exceed seventy-five officers of the Army of the United States; and the maximum number of officers of the Army and Navy to be detailed at any one time under the provisions of the act passed September twenty-sixth, eighteen hundred and eighty-eight, amending said section twelve hundred and twenty-five of the Revised Statutes, is hereby increased to eighty-five: *Provided*, That no officer shall be detailed to or maintained at any of the educational institutions mentioned in said act where instruction and drill in military tactics is not given: *Provided further*, That nothing in this act shall be so construed as to prevent the detail of officers of the Engineer Corps of the Navy as professors in scientific schools or colleges as now provided by Act of Congress approved February twenty-sixth, eighteen hundred and seventy-nine, entitled "An act to promote a knowledge of steam engineering and iron ship-building among the students of scientific schools or colleges in the United States."

Approved January 13, 1891.

An Act to increase the number of officers of the Army to be detailed to colleges.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section twelve hundred and twenty-five of the Revised Statutes, concerning details of officers of the Army and Navy to educational institutions, be, and the

same is hereby, amended so as to permit the President to detail under the provisions of said act not to exceed one hundred officers of the Army of the United States; and no officer shall be thus detailed who has not had five years' service in the Army and no detail to such duty shall extend for more than four years and officers on the retired list of the Army may upon their own application be detailed to such duty and when so detailed shall receive the full pay of their rank; and the maximum number of officers of the Army and Navy to be detailed at any one time under the provisions of the act approved January thirteenth, eighteen hundred and ninety-one, amending section twelve hundred and twenty-five of the Revised Statutes as amended by an act approved September twenty-sixth, eighteen hundred and eighty-eight, is hereby increased to one hundred and ten.

Approved, November 3, 1893.

II.—The following regulations, in regard to the detail of officers of the Army at established colleges, universities, &c., within the United States, are prescribed by the President, under the above laws:

1.—All institutions, within the meaning of section 1225, Revised Statutes of the United States, and of the acts of Congress amendatory thereof, shall, for purposes of the detail of officers of the Army as military instructors and of the course of military instruction to be pursued thereat, be divided into three classes, as follows:

First Class.—All schools to which officers of the Army, active or retired, may be detailed under the provisions of existing law, except schools of the second and third classes.

Second Class.—Agricultural schools established under the provisions of Congress of the act of July 2, 1862, and which are required by said act to include military tactics in their curriculum.

Third Class.—Military schools or colleges, i. e., those whose organization is essentially military and one of whose primary objects is the acquisition of a high degree of military drill and discipline.

2.—No officer who has not had five years' service as such, nor any officer not of the line of the Army,

shall be eligible for detail as military instructor, nor shall any officer above the grade of lieutenant be so detailed so long as there are eligible lieutenants available; nor shall any officer on the retired list of the Army be detailed in the limited number authorized by the act of November 3, 1893, so long as any eligible officer on the active list be available, except at institutions of the first class, for detail to which competent officers on the retired list shall have the preference. All details from the retired list will, under the provisions of said act, be included in the limited number of details authorized by that act.

3.—Details shall be made, first, from lieutenants who have graduated at one of the service schools; second, from those recommended by their regimental commanders. After September 1, 1903, no lieutenant shall be recommended by his regimental commander who has not successfully taken the course at an officers' post school.

4.—Details shall be made to begin with the school term and shall be for a period of two years, except that in case of retired officers the detail may be for four years.

5.—When an officer is detailed to relieve another as military instructor, he shall report at the institution to which assigned not less than two weeks prior to the departure of his predecessor.

6.—Applications for the detail of officers must be addressed by the president of the institution to the Adjutant General of the Army and be accompanied by the last printed catalogue and a certificate as to the number of male students the institution has the capacity in buildings, apparatus, and instructors to educate at one and the same time; the number of such students in actual attendance at the time of

application, or if the application be made during vacation, the number actually in attendance during the session immediately preceding it; and the number over fifteen years of age. The certificate must also show the grade of the institution, the degrees it confers, and whether or not it is a land-grant school, or a military school as defined in the preceding Paragraph II, section 1.

7.—Where a State has more than one school endowed by the national land-grant, under the act approved July 2, 1862, the school which is reported by the governor of the State as most nearly meeting the requirements of existing law will be held to have the first claim to the officer allotted to the State for detail at a land-grant college.

8.—When application is made for the detail of an officer of the Army at an institution to which an officer had not theretofore been assigned, it shall be visited by an inspector or other suitable officer, who, after explaining to the president and the faculty the requirements of these regulations, shall satisfy himself as to the intention and ability of the school authorities to comply with them, and whether the general sentiment of the faculty is cordially in favor of military instruction as herein required. The inspector shall then report to the War Department whether such detail should be made.

9.—Officers detailed as military instructors shall, at the end of each quarter, report in writing to the Adjutant General of the Army as to the exact compliance by the school authorities with these requirements of the regulations, for such action as the Secretary of War may direct. A similar report shall be made annually by an officer of the Inspector General's Department, after a careful inspection of the military department of each institution, and if

in any case the report is adverse the military instructor shall be withdrawn.

10.—No detail of military instructor shall be made at any institution which does not guarantee to maintain at least 100 pupils under military instruction.

11.—Pupils under military instruction shall be organized into companies and battalions of infantry, the drill and administration of which shall conform in all respects to that of the Army. The officers and the noncommissioned officers shall be selected by the military instructor acording to the principles governing such selection at the United States Military Academy, and shall receive their commissions and warrants from the president of the institution.

12.—Pupils organized for military instruction shall be known as "The company (or battalion) of cadets of —— Institution." Upon occasions of military ceremony, in the execution of drills, guard duty, and when students are receiving any other practical military instructions, they shall appear in the uniform prescribed by the institution. They shall be held strictly accountable for the arms and accouterments issued to them.

13.—At every institution of the first class (see Paragraph III) at which a military instructor is detailed there shall be allowed a minimum of four hours each week during each school term to the department of military science and tactics; at every institution of the second class there shall be allowed a minimum of five hours; and at every institution of the third class there shall be allowed a minimum of six hours. This time shall be occupied as the military instructor, in view of the hereinafter prescribed curriculum and such instructions as he may from time to time receive from the War Department, may deem best.

14.—The officer detailed as military instructor shall reside at or near the institution to which assigned, and when in the performance of his military duties shall appear in proper uniform. He shall, in his relations to the institution, observe the general usages and regulations therein established affecting the duties and obligations of other members of the faculty. Except at institutions of the first class as defined in Paragraph II, section 1, he shall not perfrom any other duties than those of instructor in military science and tactics.

III.—All rules and orders relating to the organization and government of the military students; the appointment, promotion and change of officers, and all other orders affecting the military department, except those relating to routine duty, shall be made and promulgated by the professor of military science and tactics after being approved by the president or other administrative officer of the institution.

IV.—It is the duty of the professor of military science and tactics to enforce proper military discipline at all times when students are under military instruction, and in case of serious breaches of discipline, or misconduct, to report the same to the proper authorities of the institution, according to its established methods. In case no suitable action is taken by the authorities of the school, the military instructor will report the facts to the Adjutant General of the Army with a view to his being relieved from an institution where discipline can not be maintained.

V.—The following is prescribed as the minimum course of military instruction, practical and theoretical, at all institutions to which a military instructor is assigned:

1.—Institutions of the First Class.

(*a*) Practical:

Infantry Drill Regulations, through the school of the battalion in close and extended order.

Advance and rear guards, and outposts.

Marches.

The ceremonies of battalion review, inspection, parades, guard mounting, and escort of the colors.

Infantry target practice.

Instruction in First Aid to the Injured.

Weather permitting, there shall be not less than one parade and one guard mount during each week of the school term; and one battalion inspection and review each month.

In no case shall target practice, to the extent permitted by the allowance of ammunition, be omitted during the school year except on authority given in each case by the Secretary of War.

Target practice on the range should be preceded by instruction in gallery practice and at those institutions where range practice cannot be had, every effort must be made to substitute gallery practice for it.

(*b*) Theoretical:

The InfantryDrill Regulations covered by the practical instruction.

The Manual of Guard Duty.

Small-Arms Firing Regulations, Parts I, II, and VII.

2.—Institutions of the Second Class.

(*a*) Practical:

Same as the practical course for institutions of the first class and, in addition—

A guard shall be mounted five times (weather permitting) in each week of the school year and the guard shall be practically instructed for one hour in the posting and relief of sentinels and their duties.

(*b*) Theoretical:

Same as the theoretical course for institutions of the first class, and, in addition—

Ten lectures each year upon the following subjects, notes to be taken by the students and to be made the basis of subsequent recitations:

Two lectures on the organization of the United States Army, including volunteers and militia.

One lecture on patrols and outposts.

One lecture on marches.

One lecture on camps and camp hygiene.

Three lectures on lines and bases of operations.

Two lectures on the attack and defense of advance and rear guards and outposts, and convoys.

All of the foregoing to be illustrated by historical examples.

3.—Institutions of the Third Class.

(*a*) Practical:

Same as the practical course for institutions of the second class, and, in addition—

Light Artillery Drill Regulations in the school of the cannoneer.

Mechanical maneuvers.

Aiming drill and, where practicable, target practice.

There should be a guard mount and parade daily (weather permitting), except Saturdays and Sundays.

One-fourth of the time devoted to practical work should be given to advance guard and outpost drill, reconnoissances and patrols, conducted as prescribed in any work accepted by the War Department as a standard on Security and Information.

Instruction in First Aid to the Injured.

(*b*) Theoretical:

Same as the theoretical course for institutions of the second class, and, in addition—

The elements of field engineering to include practical exercises in the determination of the military crest and the profiling of hasty intrenchments for infantry; the study of an elementary work on the art of war.

VI.—The following apportionment, in accordance with the foregoing laws and the census of 1900, having received the approval of the Acting Secretary of War, is adopted, and details will be made in accordance therewith:

Apportionment of details at colleges, universities, etc., under section 1225, Revised Statutes, and the amendments thereof, based upon the number of officers of the Army available for such details.

States.	Population of States arranged in groups	Population of groups and of States not arranged in groups	Details for land-grant schools	Details by population	Total details due
Maine	694,466	1,449,695	1	1	4
New Hampshire	411,588		1		
Vermont	343,641		1		
Massachusetts		2,805,346	1	2	3
Rhode Island	428,556	1,336,976	1	1	3
Connecticut	908,420		1		
New York	7,268,894	9,152,563	1	7	9
New Jersey	1,883,669		1		
Pennsylvania	6,302,115	6,486,850	1	5	7
Delaware	184,735		1		
Maryland	1,118,044	1,396,762	1	1	2
District of Columbia	278,718		. . . .		
Virginia	1,854,184	2,812,984	1	2	4
West Virginia	958,800		1		
North Carolina		1,893,810	1	1	2
South Carolina		1,340,316	1	1	2
Georgia	2,216,331	2,744,873	1	2	4
Florida	528,542		1		
Alabama		1,828,697	1	1	2
Mississippi		1,551,270	1	1	2
Louisiana		1,381,625	1	1	2
Arkansas		1,311,564	1	1	2
Texas	3,048,710	4,034,411	1	3	4
Oklahoma	398,331		. . . .		
Indian Territory	392,060		. . . .		
New Mexico	195,310		. . . .		
Tennessee	2,020,616	4,167,790	1	3	5
Kentucky	2,147,174		1		
Ohio		4,157,545	1	3	4
Indiana		2,516,462	1	2	3
Michigan		2,420,982	1	2	3
Illinois	4,821,550	6,890,592	1	5	7
Wisconsin	2,069,042		1		
Iowa	2,231,853	5,338,518	1	4	6
Missouri	3,106,665		1		
Minnesota	1,751,394	2,715,439	1	2	6
North Dakota	319,146		1		
South Dakota	401,570		1		
Montana	243,329		1		2
Kansas		1,470,495	1	1	
Nebraska	1,066,300	1,606,000	1	1	3
Colorado	539,700		1		
Alaska	63,592	1,691,549	. . . .	1	7
Washington	518,103		1		
Oregon	413,536		1		
Idaho	161,772		1		
Wyoming	92,531		1		
Nevada	42,335		1		
Utah	276,749		1		
Arizona	122,931		. . . .		
California	1,485,053	1,639,054	1	1	2
Hawaii	154,001		. . . .		

VII.—The following are the regulations prescribed by the Secretary of War for the issue of arms, etc., required for military instruction and practice at colleges, universities, etc., under section 1225, Revised Statutes, and the amendments thereof:

1. As the appropriations for the supply of ordnance and ordnance stores to the Army are very limited, and as the language of the law restricts the issues that can be made to colleges to such as "can be spared for that purpose," issues of ordnance and ordnance stores to colleges will be limited to arms and the equipments and implements necessary to enable them to be used by the students for purposes of drill, parade, and similar exercises, but not for field and encampment purposes.

2. Only such ordnance and ordnance stores as are enumerated in the following paragraphs will be issued for the purpose of military instruction to each selected college and university having an officer of the Army stationed thereat.

3. The field pieces of artillery, with their carriages and implements, will be limited to the following, viz:

2 muzzle-loading wrought-iron rifled guns, caliber 3 inches.
2 carriers and limbers for 3-inch gun.
2 gunner's haversacks.
2 trail handspikes.
4 lanyards.
2 priming wires.
4 sponges and rammers, 3-inch.
4 sponge covers, 3-inch.
2 tube pouches.
4 thumb stalls.
2 tompions, 3-inch.
2 vent covers.
1 pendulum-hausse, 3-inch.

1 pendulum-hausse seat.
1 pendulum-hausse pouch.
2 paulins, 12 by 15 feet.

4. When in the opinion of the Chief of Ordnance the supply on hand will permit, there may be issued in lieu of the foregoing two of the 3.2-inch breech-loading steel field guns, with their carriages and implements, as above.

5. The small arms issued to any college will be the Springfield "Cadet" rifles, similar to those which were supplied the United States Military Academy at West Point, but in no case will the number of rifles issued be in excess of the number of male students in regular attendance and actually receiving military instruction.

6. The accouterments to be issued with the Cadet rifles will consist of a bayonet scabbard, cartridge box, gun sling, waist belt, and waist belt plate.

7. The service noncommissioned officer's sword can be issued for the use of the officers and non-commissioned officers of the Corps of Cadets. The sliding frog will enable these swords to be worn on the ordinary waist belt.

8. A limited number of cavalry sabers and belts (for purposes of instruction only) will be issued when satisfactory evidence of their necessity is presented.

9. Issue of the above stores will be made by the Chief of Ordnance to any selected institution upon its filing a bond in the penal sum of double the value of the property, conditioned that it will fully insure, take good care of, and safely keep and account for the same, and will, when required by the Secretary of War, duly return the same, within thirty days, in good order, to the Chief of Ordnance, United States Army, or such other officer or person

as the Secretary of War may designate to receive them.

10. For practice firing, the following allowances of ammunition will be made annually to each of the various institutions, viz: One hundred blank cartridges and 300 friction primers for 3-inch, or for 3.2-inch breech-loading gun, as the case may be. Projectiles will not be issued for the field guns.

11. Ammunition for rifle target practice will be issued annually at the rate of 50 carbine ball cartridges (or their equivalent value in reloading material, reloading tools, or target supplies) for each cadet actually engaged in target practice, but there shall not be issued to any college more than 7,500 ball cartridges in any one year. Where it is not deemed practicable to have target practice, a limited quantity of rifle blank cartridges will be furnished for instruction in firing. This ammunition will be issued upon requisition to be forwarded to the Chief of Ordnance by the presidents or superintendents of the institutions; and as annual allowances date in all cases from July 1 of each year, requisitions should be forwarded before or as soon after that date as practicable for the current year's supply. Undrawn allowances of one year cannot be drawn in the succeeding year.

12. The reloading material, reloading tools, and target supplies which can be drawn as part of the ammunition allowance for target practice are:

(*a*) Reloading materials, consisting of—

Small arms powder.
Carbine bullets.
Round balls.
Cartridge primers.

(*b*) Reloading tools, consisting of—

1 set of hand reloading tools (bench reloading tools are not issued to colleges).

(*c*) 1 bullet mould, casting 4 balls.
1 melting ladle.
1 pouring ladle.

(*d*) Target supplies, consisting of—

Paper targets A and B, and centers for these targets.
Paper targets for gallery practice.
Pasters, white and black.

13. When tools for reloading rifle cartridges or implements for casting lead balls for gallery practice have been issued to colleges, the parts required to keep them in good order may be issued when requested, and charged against the money value of the annual ammunition allowance.

14. All ordnance and ordnance stores issued to colleges must be kept insured by the college authorities for their full invoice value, as shown in the bond, and the Chief of Ordnance promptly informed when and where the insurance is placed.

15. The transportation of ordnance and ordnance stores from the Government arsenals to institutions of learning, and from institutions of learning back to Government arsenals, is always without expense to the United States.

16. The colleges to which issues of ordnance and ordnance stores are made, under bonds given as required by law, will be required to keep said property in like good and serviceable condition as when issued by the Government, and for this purpose the spare parts, implements and appendages necessary for this purpose will be sold to them at cost price on application to the Chief of Ordnance.

17. When ordnance and ordnance stores are returned to the Ordnance Department by any institution of learning, they will be carefully examined when received at the arsenal, and if they are found imperfect or unserviceable by reason of carelessness or other causes than legitimate use in service, the damage will have to be made good to the United States.

18. The cost of all missing property must be made good to the United States.

19. When any of the ordnance or ordnance stores become unfit for further use the president of the college will report the fact to the Chief of Ordnance and he will authorize the college to send them to an arsenal without expense to the United States. On reaching the arsenal the property will be inspected by an officer of the Ordnance Department and if its condition is found to be due to the ordinary incidents of service it may be replaced with serviceable stores of like character, but if its condition is found to be due to carelessness or other than legitimate causes the extent of damage or value of missing stores will be determined by the Chief of Ordnance and must be paid by the college before any new issue of stores is made.

20. The guns and carriages must not be allowed to remain out doors with only the paulins as a protection from the weather, but they must be housed in a suitable shed and habitually kept there except when used for drills or saluting purposes.

21. Regular property returns will be rendered quarterly to the Chief of Ordnance by each president or superintendent of an institution supplied with arms, etc., accounting for all ordnance and ordnance stores issued to the institution under his charge.

These returns will be made on the blank forms to be supplied by the Chief of Ordance.

22. Failure on the part of any institution of learning to comply with the foregoing regulations, or any others that may be prescribed by the Chief of Ordnance for the care, preservation, or accountability of any ordnance or ordnance stores issued to it by the United States, will be considered sufficient cause for the prompt withdrawal by the Secretary of War of the Government property in its possession.

23. Whenever any institution shall fail to return the public property in its charge within thirty days after demand made by the Secretary of War, the delinquency will be peremptorily referred to the Attorney General, that the bond of the institution may forthwith be put in suit.

24. The following is the form of bond to be executed previous to the issue of ordnance and ordnance stores, viz:

FORM OF BOND

Know all men by these presents that we, the *Knox College, located at Galesburg, Illinois,* a corporation duly organized under the laws of the State of *Illinois,* as principal, and *Clark E. Carr,* of *Galesburg, Illinois,* and *Edgar A. Bancroft,* of *Galesburg, Illinois,* as sureties, are held and bound to the United States of America in the penal sum of **eight thousand four hundred and seventy-two dollars and ninety cents* ($8,472.90), for the payment of which well and truly to be made to the Secretary of War, or to such officer or person whom he may designate, we do bind ourselves and each of us, our successors, heirs, executors and administrators, for and in the whole, jointly and severally, firmly by these presents. Given under our hands and seals at *Galesburg, Illinois,* this 10th day of *May,* A. D. 1888.

The condition of the above obligation is such that, whereas the *Knox College* is an established *college* within the United States having capacity to educate at the same time not less than one hundred and fifty male students, and whereas the said †*college* has heretofore applied to the President of the United States to detail an officer of the Army to act as professor of military science and tactics thereof, and the Presi-

*Double the value of the property. †College or university.

dent by virtue of the authority vested in him by section 1225, Revised Statutes, as amended by the act of September 26, 1888, has detailed such officer to act accordingly; and whereas the Secretary of War by the authority vested in him by said section is about to issue to the said * *college* for the military instruction and practice of the students thereof the following ordnance and ordnance stores, to wit:

2 muzzle-loading wrought-iron rifled guns, caliber 3 inches, $450	$ 900.00
2 carriages and limbers, for 3-inch gun, at $325	650.00
2 gunner's haversacks, at $2.20	4.40
2 trail handspikes, at $1.10	2.20
4 lanyards, at 10 cents	.40
2 priming wires, at 10 cents	.20
4 sponges and rammers, 3-inch, at $1	4.00
4 sponge covers, 3 inch, at 30 cents	1.20
2 tube pouches, at $1.50	3.00
4 thumb stalls, at 20 cents	.80
2 tompions, 3-inch, at 30 cents	.60
2 vent covers, at 40 cents	.80
1 pendulum-hausse, 3-inch	2.50
1 pendulum-hausse seat	.60
1 pendulum-hausse pouch	.75
2 paulins, 12 x 15 feet, at $10.25	20.50
150 Springfield "Cadet" rifles, caliber .45, with appendages, etc., at $15	2,250.00
150 bayonet-scabbards, steel, Cadet, at 81 cents	121.50
150 waist-belts and plates, at 60 cents	90.00
150 cartridge boxes, caliber .45, at $1.22	183.00

being together of the value of *four thousand two hundred and thirty-six dollars and forty-five cents* ($4,236.45); all of which property, when issued, the said **college* hereby agrees to take good care of and safely keep, insure and keep insured against loss to the United States, and account for, quarterly, on blank forms to be prescribed by the Chief of Ordnance, United States Army, and to return all of said property to said Chief of Ordnance, or such officer or person as may be designated to receive the same, within thirty days after demand by the Secretary of War.

Now therefore if the said **college* shall take good care of and safely keep and insure and keep insured against loss to the United States and account for the said ordnance and ordnance stores, and shall when required by the Secretary of War duly return the same within thirty days in good order to the Chief of Ordnance, United States Army, or to such other officer or person as the Secretary of War may designate to receive them, then this obligation shall become inoperative and void, otherwise to remain in full force and virtue.

In witness whereof, and in pursuance of a resolution of the †*board of directors* passed on the *first* day of *May*, A. D. 1888, a copy of which

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*College or university.

†Board of directors or other governing body of the institution.

is hereto annexed, the corporate seal of said corporation is hereto affixed and these presents duly signed by the **president of the college.*

In presence of
GEO. A. LAWRENCE,
THOMAS A. BROWN.

KNOX COLLEGE,
by NEWTON BATEMAN, [SEAL.]
President.

In presence of
ROBERT G. SUTTON,
CHAS. E. BAILEY.

CLARK E. CARR, [SEAL.]

In presence of
E. A. SKILLMAN,
S. C. HULL.

EDGAR A. BANCROFT, [SEAL.]

STATE OF *Illinois,*
County of Knox, } *ss.*

On this 10th day of *May* 1888, personally appeared before me, a *notary public* for the county aforesaid, *Clark E. Carr*, one of the sureties named in the within bond, who made oath that he is worth *eight thousand five hundred* dollars over and above all his debts and liabilities.

CLARK E. CARR.

Sworn and subscribed before me on the day and date aforesaid,

GEORGE A. LAWRENCE,
Notary Public.

STATE OF *Illinois,*
County of Knox, } *ss.*

On this 10th day of *May*, 1888, personally appeared before me, a *notary public* for the county aforesaid, *Edgar A. Bancroft*, one of the sureties named in the within bond, who made oath that he is worth *eight thousand five hundred* dollars over and above all his debts and liabilities.

EDGAR A. BANCROFT.

Sworn and subscribed before me on the day and date aforesaid.

GEORGE A. LAWRENCE,
Notary Public.

I, *Elmer S. Dundy*, hereby certify that the sureties who have signed the foregoing bond are personally known to me, and that each is responsible and sufficient to insure the payment of the entire penalty named therein.

ELMER S. DUNDY,
Judge of the District Court of the United States
in and for the State of Illinois.

*The president or officer authorized to sign for the institution.

THE FOLLOWING INSTRUCTIONS MUST BE STRICTLY OBSERVED IN PREPARING THE BOND REQUIRED TO BE FURNISHED THE CHIEF OF ORDNANCE, U.S.A., BEFORE ANY ARMS, ETC., CAN BE OBTAINED BY ANY COLLEGE.

25. A copy of the record of the adoption of the resolution of the board of directors or governing body of the institution, including also the record of the resolution itself, authorizing the president to execute the bond on behalf of the corporation, authenticated by the signature of the secretary and the corporate seal, must acompany the bond.

26. A copy of the charter or articles of incorporation, authenticated by the Secretary of State, is also required.

27. The sureties must sign and seal the bond. The seal must be attached opposite the signature of each person and must be a seal of wax, wafer, or other adhesive substance, not a mere scroll with a pen. Their names must be written in the body of the bond, together with their residence, including town, county, State or Territory.

28. Two witnesses are required to each signature.

29. There must be two sureties when individuals are the sureties. Each surety must make oath that he is worth some specific sum, equal to the full amount of the penalty, over and above all his debts and liabilities. Two persons must not join in one affidavit. Each one must subscribe and acknowledge his own oath separately. The sufficiency of the sureties must be certified to by some United States judge or district attorney, whose official character must be certified to by the clerk of his court, such certificate to be on or attached to the bond.

30. Incorporated surety companies which have

complied with the requirements of the War Department will also be accepted as surety on the bond, and in this case only one surety is required.

31. A college corporation desiring ordnance or ordnance stores for the use of the college must furnish evidence that some one is authorized to execute in its behalf the bond which the law requires.

32. This authority can only be given by the governing body of the corporation, i. e., the body invested with authority to employ the faculty and make all other contracts in its behalf, and designated in the charter of the corporation as board of regents, board of trustees, etc., and this body must give the authority in the formal way in which it does other business, the action taken being recorded as a part of the proceedings of the meeting at which it was taken. The evidence of this authority required to be furnished to this office will be an extract from the record of the proceedings of the board of regents, or board of trustees, showing that the board met in its official capacity, that a resolution was offered authorizing some person by name to execute the required bond for the corporation, and that this resolution was adopted; and this extract must be certified, under the corporate seal, to be a true extract from the record of the proceedings of the board, by the secretary or other custodian of the records. His certificate that the authority has been conferred, or that such a resolution was passed is not sufficient. The record speaks for itself and a copy of so much of it should be furnished as will show that it purports to be a record of the board that the resolution was offered and that it was passed.

33. Great pains should be taken to use the name given the corporation by its charter and to mention in the resolution the particular bond to be given.

34. It is desired that a copy of the charter be sent to the Chief of Ordnance, United States Army, Washington, D. C.; also a copy (accompanied by certificate under corporate seal) of so much of the record of the election of the officers of the corporation as will show the election of the particular officer who is to execute the bond.

In calling for form of bond it should be stated—

First. If the principals and sureties are individuals.

Second. If the principal is a corporation and surety an individual.

Third. If principal is an individual and surety a corporation.

Fourth. If both principal and surety are corporations.

As indicated above, there are four forms of bond, as follows:

Form K. When both principal and sureties are individuals.

Form L. When principal is a corporation and sureties are individuals.

Form M. When principal is an individual and surety is a corporation.

Form N. When both principal and surety are corporations.

In calling for the blank forms of bond, they may be called for as "Form K," "Form L," etc.

VIII.—In the administration of each cadet battalion the adjutant, assisted by the sergeant major, shall keep a letter book, an order book, a roster, and a consolidated morning report book. The quartermaster, assisted by the quartermaster sergeant, shall keep a book containing a record of all issues of Government property with the receipts of those to whom issued. Each captain shall keep a morning re-

port book and, where necessary for the regulation of duty, a roster. At institutions of the third class the morning report shall be made out by the captains daily; at the other institutions on drill days or when the cadets are ordered to parade.

IX.—The professor of military science and tactics shall render a quarterly report to the Adjutant General of the Army of the whole number of undergraduate students in the institution capable of performing military duty, the number required by the institution to be enrolled as military students, the average attendance at drills, the number absent, and number and kind of drills, recitations and lectures, or other instruction had during the quarter, and the number reported for discipline. He will retain copies of all reports and correspondence and transfer them to the officer who may succeed him, or forward them to the Adjutant General's office should the detail expire. On the graduation of every class he shall obtain from the president of the college and report to the Adjutant General of the Army the names of such students belonging to the class as have shown special aptitude for military service, and furnish a copy thereof to the Adjutant General of the State for his information. At those institutions which grade the department of military science and tactics equally with the other important branches of instruction, and which make proficiency in that department a requisite for securing a diploma, the names of the three most distinguished students in said department shall, when graduated, be inserted in the United States Army Register.

X.—The military department shall be subject to inspection under the authority of the President of the United States; such inspections to be made, when practicable, near the close of the college year.

The inspecting officer shall, upon his arrival at the institution, report to the president or other administrative officer, in order to obtain from him the necessary facilities for the performance of his duty.

A copy of the report of inspection will be furnished the president of the institution by the War Department.

XI.—The following are the laws providing for the detail of retired officers at colleges, universities, etc.:

Section 1260, Revised Statutes.

Any retired officer may, on his own application, be detailed to serve as professor in any college. (But while so serving, such officer shall be allowed no additional compensation.)

Extract from the act of Congress approved May 4, 1880.

That upon application of any college, university, or institution of learning incorporated under the laws of any State within the United States, having capacity at the same time to educate not less than one hundred and fifty male students, the President may detail an officer of the Army on the retired list to act as president, superintendent, or professor thereof; and such officer may receive from the institution to which he may be detailed the difference between his retired and full pay, and shall not receive any additional pay or allowance from the United States.

Extract from the act of Congress approved August 6, 1894.

Provided, That nothing in the Act entitled "An Act to increase the number of officers of the Army to be detailed to colleges," approved November third, eighteen hundred and ninety-three, shall be so construed as to prevent, limit, or restrict the detail of retired officers of the Army at an institution of learning under the provisions of section twelve hundred and sixty, Revised Statutes, and the Act making appropriations for the support of the Army, and so forth, approved May fourth, eighteen hundred and eighty, nor to forbid the issue of ordnance and ordnance stores, as provided in the Act approved September twenty-sixth, eighteen hundred and eighty-eight, amending section twelve hundred and twenty-five, Revised Statutes, to the institutions at which retired officers may be so detailed; and said Act of November third, eighteen hundred and ninety-three, and said Act of May fourth, eighteen hundred and eighty, shall not be construed to allow the full pay of their rank to retired officers detailed under said section twelve hundred and sixty, Revised Statutes, and said Act of May fourth, eighteen hundred and eighty.

Extract from the act of Congress approved February 26, 1901.

SECTION 1. * * * That section twelve hundred and twenty-five of the Revised Statutes, concerning the detail of officers of the Army and Navy to educational institutions be, and the same is hereby, amended so as to permit the President to detail under the provisions of that Act, and in addition to the detail of the officers of the Army and Navy now authorized to be detailed under the existing provisions of said Act, such retired officers of the Army and Navy of the United States as in his judgment may be required for that purpose, to act as instructors in military drill and tactics in schools in the United States, where such instruction shall have been authorized by the educational authorities thereof, and where the services of such instructors shall have been applied for by said authorities.

SEC. 2. That no detail shall be made under this Act to any school unless it shall pay the cost of commutation of quarters of the retired officers detailed thereto and the extra-duty pay to which the latter may be entitled by law to receive for the performance of special duty: *Provided*, That no detail shall be made under the provisions of this Act unless the officers to be detailed are willing to accept such position without compensation from the Government other than their retired pay.

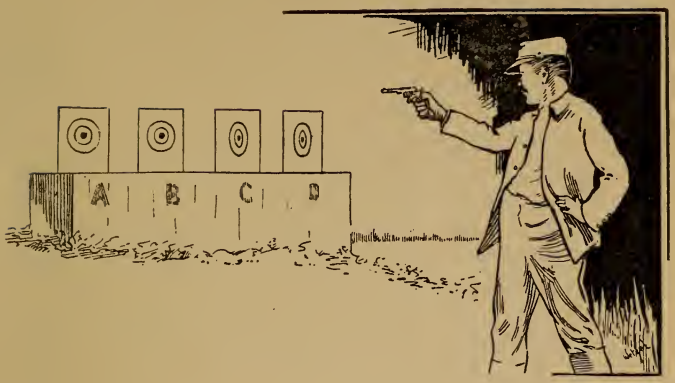
The details authorised by section 1260, Revised Statutes, as amended by the act approved May 4, 1880, and by the act approved February 26, 1901, will be in addition to the number allowed by section 1225, Revised Statutes, and the amendments thereof, and may be made to incorporated institutions of learning of the requisite grade in any State, without reference to population or to the number of officers already serving therein.

BY COMMAND OF LIEUTENANT GENERAL MILES:

H. C. CORBIN,

Adjutant-General,

Major General, U. S. Army.



REVOLVER PRACTICE

I do not feel that I should close this book without submitting some remarks upon the subject of the revolver, as it is becoming so much in use as a sport and pastime that it merits at least a passing notice.

The first thing for the novice to consider, when contemplating the purchase of a revolver, is the use to which it is to be applied. If it be for offensive or defensive purposes, the fine points are not to be much thought of. A weapon of large calibre, from 32 to 45, is calculated to stop your man. The larger the better. Very few men hit what they shoot at, with this character of weapon, without much experience and practice, therefore don't buy one. Better depend upon a hickory club if you don't intend to find out how and where it shoots before you have occasion to use it.

For target work do not squander your money on a cheap or inferior weapon, but purchase a 38 or 44, Colt or Smith & Wesson. For all around work the

Army pattern 38 caliber is the best and possesses all the merit claimed for them both as to workmanship and accuracy. The 44 caliber revolvers of the same makes with target sights are the perfection of the art.

After you have made a selection of a revolver, if for target shooting, see that the trigger pull is made smooth and about 3½ pounds in weight, and above all see that the creep is taken out, as a creeping trigger is an abomination on any kind of a gun and it should be cured at the earliest moment practicable. Lose no time in making the acquaintance of your revolver, ascertain how it shoots and where you have to hold on the target to hit the bullseye.

Revolvers, like people, have peculiarities and must be understood to be appreciated.

If you are not what may be considered a good shot, it will be a good plan to have some well known shot fire your revolver for you a number of times. If he succeeds in obtaining good results you may reasonably expect to do the same thing after having practiced sufficiently to get yourself in shape. Not having any one to test the gun, you had better commence your initial shooting at 12 to 15 feet, using a target 2 to 3 feet square, which is large enough to catch all of the shots and show where you are shooting. Try very hard to hold every time alike. If you discover that your shots are going high, as the tendency is generally in that direction, use a very fine sight; that is, just see the tip of the front sight as low down in the V or groove on the revolver frame as possible, aiming at 6 o'clock, or bottom edge of the bull. If you are still high, and holding well, place a black paster at which to aim as low below the bull as your shots strike high, this change should give you occasional shots in the black. When you

have satisfied yourself as to this distance, move back two or three paces, continuing the practice, and so continue until you are able to keep on the target at the regulation distance.

It is frequently found necessary, on account of shooting persistently to the right or left of the bull, to twist the barrel so as to overcome this tendency. This should not be attempted by any one not skilled in such matters. The sights may also require raising or lowering for the same reason. The revolver can be made to shoot where it is held; therefore do not condemn it without a fair trial, as you, and not the revolver, may be responsible for the poor shooting.

By observing the above suggestions and with a little patience and perseverance, the art of revolver shooting may be acquired. Resolve in the beginning not to be discouraged. Take things easy. You will accomplish your ends best by not being in a hurry. Grasp your revolver firmly, but not tight enough to produce nervousness, and every time alike, and raise it to the level of the eye.

Extend the arm, not at its fullest length, but well away from the body, obliquely to the right with the left hand on the hip. This is the position assumed by many of the best shots and is the most graceful and comfortable, and as comfort in shooting is as desirable as comfort in any other pleasure or pastime, it should be adopted by beginners.

Do not copy the manner of some shooters, by raising the revolver above the head and lowering it. I have seen revolvers discharged accidentally by such foolish manoeuvers.

It is not objectionable, however, to lower the revolver from say 20 degrees, bringing it down gracefully while the arm is extended. This article

is not intended to teach old dogs new tricks, for many of our best shots have individual peculiarities in positions, etc., which could not be changed by any amount of argument.

Beginners in revolver shooting very quickly experience an arm tired feeling after firing a few times. This will disappear as soon as the muscles become trained. Cultivate the use of the arm in the position assumed in shooting, by frequent exercise. Nothing is better for this purpose than the use of the revolver in aiming at an object and snapping.

Cultivate steadiness by competition. Shoot a match whenever an opportunity offers. There is nothing like it for taking off the rough edge and the inclination to buck, or the trembles.

The next best thing to a good revolver is good ammunition and one is as indispensible as the other to the shooter.

The U M. C., the Peters and the Winchester cartridge companies manufacture high grades, and many revolver shots use the full charge of these manufactures for gallery practice as well as range work, yet as a matter of economy as well as a desire to know just what may be depended upon, large numbers of our best shots mould the bullets and load their own shells. It is a very easy matter to do this, when one is supplied with an ideal outfit. In my own experience I have found that for gallery work with a ball of 150 grains, and 2 grains of L. & R. Bullseye and 3½ grains of "Unique" powders, excellent work may be obtained. For the range it requires 3 2-10 grains of Bulls Eye and 4 of "Unique" These charges are for the Smith & Wesson 38 calibre revolvers. For the Colt a heavier charge is required to obtain anything like the corresponding accuracy. This is due to the fact that the 38 Smith

& Wesson is really not a 38, and the ball of that calibre requires considerable force to force it through the barrel, while the same ball will drop through the Colt without apparently touching the insides of the barrel. To cause the ball to expand sufficiently to take the rifling uniformly under such conditions will admit of nothing less that the heaviest charge that may be used with safety. On this account I think the former revolver the most desirable.

The regulation distance for gallery target practice with the 38 calibre army pattern revolver is 20 yards, and the targets in general use are the standard American, reduced to that distance. This gives the size of the outside circle 8¾ inches in diameter with the values of the shots as follows: 10, 9, 8, which constitutes the bullseye, with 7, 6, 5 and 4 for the values of the other rings, shots on the target outside of the rings counting 3. The Washington Revolver Club, prompted by the desire to reduce the cost of shooting to the minimum, had the Farrow Arms Co., of Washington, manufacture a type for printing the targets, at a cost of $4.50, and it has the targets printed on No. 70 pulp, cut 8¾ x 9½, at a cost of $3.00 per 1000. The saving on this item amounts to considerable to the club treasury. This club has engaged in a number of contests where the difference in revolvers made it necessary that there should be a handicap, and as there are no definite rules governing they have generally been a matter of mutual agreement. An opinion was asked of Mr A. L. A. Hummelwright, of the United States Revolver Association, who is an accepted authority on revolver shooting, as to the proper handicap for the 38 calibre army revolver to allow the 32 Colt 4 inch barrel. He states that in a 10 shot match at 20 yards the

allowance should be 6 points per man or 4 yards in distance, that is 16 to 20 yards even count. The advantage of the target sight over the plain is deemed to be equal to 5 yards in distance or 6 points in 10 shots at equal distance. Therefore the target revolver should be shot at 25 yards, to the army plain pattern's 20 yards, calibres being equal. The 44 calibre revolver should allow two additional points to the 38 calibre in 10 shots. This is on account of the difference in diameter of balls. The only fair manner of determining the relative merits of skill of shooters is to contest on even terms with revolvers of the same pattern, but my advice is, to have matches under any conditions, giving or taking points if need be, rather than not shoot under match conditions at all.

For out of door practice the usual distances are 25, 50 and 75 yards and the targets used are the standard American, 8 inch bullseye, or the army target A, with the 8 inch bullseye counting 5, the centre 4, inner 3, and outer 2. The latter is used for military shooting principally.

CARE OF THE REVOLVER

If you fail to clean your revolver after each time it is used, you are liable to have on your hands a poor shooter. A revolver that is worth having is worth a few minutes of your time to give it a good cleaning before putting it away. Moisten the barrel by blowing through it after shooting and then use a stiff brush to rub out the powder and refuse, after which rub it thoroughly dry with soft rags, after which give it a good oiling within and without, using a wooden rod for rubbing the interior of the barrel to prevent injury to the rifling.

The preceding remarks are not submitted as embodying any scientific principle in reference to revolver shooting, but they will be recognized as the suggestions of a practical enthusiast, anxious to lay before the novice a few plain facts which if followed will result in affording an occasional hour of pleasure.

L. of C.

The cuts of firing positions, loading tools, and those relative to the action of the U. S. .30 cal. magazine rifle, have been used through the courtesy of the War Department.

MODERN RIFLE SHOOTING
FROM THE AMERICAN STANDPOINT

BY

W. G. HUDSON, M. D.

THE JERSEY GUARDSMAN.

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